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GUNSHOT WOUNDS OF THE HEAD IN THE ACUTE STAGE*

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For my address I have chosen the subject of gunshot wounds of the head, with particular reference to surgical treatment in the acute stage. From the outset of the war the Army Medical Services encouraged segregation of head injuries under specialists in neurosurgery and neurology, both at home and abroad; and as a result of this policy information has now been collected which enables us to treat an increasing number of battle casualties with greater understanding and confidence than we possessed at the beginning of this war.

Neurosurgical Tactics and Dispositions

Our experience is derived mainly from the work of our neurosurgical units in the Middle East and North Africa. The first neurosurgical unit was mobilized early in 1940. Major W. R. Henderson of Leeds and Major John Challis were largely responsible for working out the details of the neurosurgical and anaesthetic equipment respectively, with the help of the appropriate branch of the Army Medical Directorate, Lord Nuffield, and Mr. A. R. Bullock of Morris Garages. The neurosurgical unit was not designed to nurse or feed its patients, and did not usually have its own *x*-ray equipment, but was in all other respects self-contained and able to work at C.C.S. or general hospital. It had its own vehicles, its own source of electric power for diathermy, suction pump, operating-theatre lights, operating-table heaters, and so forth. In an empty building or tent the unit could set up its equipment and be ready to operate within an hour, and it could pack up and move elsewhere in shorter time.

As things turned out, when we first joined battle with the enemy on land the mobile self-contained character of these units fitted the requirements of modern warfare. However, our first unit had been in France for only a few days before the battle began, and there was no time for the usefulness of its mobility to be appreciated. It was captured while in surgical charge of some 800 wounded. In a not dissimilar situation at Benghazi, 18 months later, another neurosurgical unit, under the command of Major P. B. Ascroft, was able to continue work until within a few hours of the Germans' entry and then to make good its escape with all its vehicles and equipment. Later, when we were advancing across Tripolitania and Tunisia the mobility of another unit enabled the late Major K. C. Eden to keep with the forward C.C.S. and to operate on the majority of the head injuries of the Eighth Army within 24 hours.

The original equipment of these units has now stood the test of several campaigns,† and has been to some extent copied in the mobile cranio-thoracic units of the Emergency Medical Service and the mobile surgical units of the Canadian Army. The units have fitted in well with the rest of the Army Medical Services, not making disproportionate demands, and ready to turn their hands, when required, to urgent work outside their special field. However, there have been several alterations in the tactical use of the units. Early experience showed the difficulty of securing segregation of the wounded in the forward area. Both Henderson in France and Ascroft in the Western Desert found that no more than 10% of the wounds they were dealing with were head injuries. It was therefore decided that neurosurgical units should in future not work in advance of general hospitals. This policy was maintained with Major J. Schorstein's unit in North Africa, and at first with Eden's unit in the Middle East—until after the fall of Benghazi at the end of 1942. For Mareth and subsequent battles Eden, with the approval of the D.D.M.S., split his unit, leaving one section with a general hospital in Tripoli, and himself with the other section went forward to the most advanced C.C.S. From Mareth to Tunis the lines of communication were unusually narrow, and the majority of the head injuries passed through his hands (Eden, 1943). What he missed or was too busy to deal with went to the rear section of his unit at Tripoli. In this way Eden's unit dealt with most of the head injuries of the Eighth Army in the battles from Mareth to Tunis, and at an earlier stage than in previous campaigns. Out of 293 head injuries 188 were operated on within the first 24 hours, and only 34 were older than 3 days. The result was that the proportion of primary wound healing which he obtained reached the remarkable figure of 90%.

With the First Army Schorstein was in less favourable circumstances, for his lines of communication were more difficult. However, he has estimated that in the later stages of the Tunisian campaign about 75% of the head wounds of the First Army were passing through his hands. He was unable to retain cases for long, and the subsequent follow-up has not proved as easy as in the longer-established bases of the Eighth Army.

Results

The results of some of our neurosurgical units are set out in Table I. It is difficult to make comparisons, for there are so many variables—in particular the age of the wound at the time when the wounded man receives expert surgical treatment. But we must attempt to establish some standard, and the results of our different units are in some respects remarkably consistent. From the last war we have Cushing's well-documented series for comparison. From the Eastern Front in this war there are almost no precise figures as yet available to us.

Non-penetrating Wounds

In non-penetrating wounds—that is to say, wounds of the scalp and skull without penetration of the dura—there is practically no mortality. Ascroft, Eden, and Schorstein between them report 459 non-penetrating head wounds, with 3 deaths. One of these was from severe cerebral contusion; one from

* A review of the work of the Neurosurgical Units of the British Army, being the presidential address to the Section of Neurology of the Royal Society of Medicine.

† In the Tunisian campaign Major Eden added a mobile operating van, built in a captured Italian motor coach (Eden, 1943).

penetration of the lateral sinus by a spicule of bone, followed by septic thrombophlebitis of the lateral sinus and pyaemic abscesses of the lungs; and one from a tear of the internal carotid artery in the carotid canal.*

Non-penetrating wounds are, to be sure, not wholly free from complications: among the cases from Dunkirk there were two of septic scalp wounds which were followed by intracranial abscess (Cairns, 1941); but if the wound is adequately treated in the initial stages subsequent intracranial infection should be rare.

From time to time since the beginning of the war the need for more careful surgical treatment of scalp wounds has been stressed (McKissock and Brownscombe, 1941; Botterell and Jefferson, 1942). I believe that there has been considerable improvement, but both at home and abroad a serious difference still exists between the scalp wounds treated by the general surgeon and those of the neurosurgeon. In the recent campaigns Eden and Schorstein have been able to send their patients with scalp wounds back to duty in 10 to 21 days; but when a stitched scalp wound is suppurating and still contains fragments of dirt and hair which should have been removed at the original operation many weeks must elapse before the soldier is ready for duty again. In the Army, wherever neurosurgeons are available, there is an increasing tendency to send all these cases to them. But there are not enough neurosurgeons to supply all the needs of the Army—or, for that matter, the needs of the civilian population in this respect—and it is abundantly clear that general surgeons, or the new class of accident surgeons, must continue to deal with the majority of the scalp wounds which occur in this country. Technically there is nothing difficult about scalp closure, but, like other techniques, it must be learned. As Jefferson has pointed out, the general surgeon can best learn this at the operating table, handling the tools under the guidance of the neurosurgeon.

Penetrating Wounds

Let us now consider the results of treatment of penetrating gunshot wounds (Table I).

TABLE I.—*Penetrating Brain Injuries*

Surgeon	Total Head Wounds	Penetrating Wounds				
		Total	Mortality (% in brackets)	Primary Healing (%)	Deaths from Infection (%)	Remarks
Ascroft (1943)	516	292	44 (15·0)	67 (fresh) 22 (old)	10·8	Base
Eden (1943)	325	102	24 (23·6)	65·5	3·7	C.C.S.
Schorstein	—	112	15 (13·4)	67·6	Low	Forward base
Sorgo (1942)	—	29	13 (44·8)	—	34·5	—
Cushing (1918)	250	133	60 (45·1)	Ca. 70	36·5	C.C.S.

Ascroft was working at the base, and most of his cases had been operated on in the forward area by general surgeons before they reached him three or more days after being wounded. He was subsequently able to observe their progress for 60 days. The low mortality (15%) is an indication of his distance from the firing line: the nearer the front line the higher the mortality. Major Schorstein reports that of 7 men with head injuries in one battalion only 1 survived more than a few hours. In Ascroft's series a remarkably high percentage of cases developed brain abscess while under his care—75 in 292, or practically one in every four penetrating wounds. In the cases first operated on in the forward area by general surgeons the incidence of subsequent brain abscess was more than twice as high as it was in the cases first operated on by Ascroft's team, even though Ascroft's cases were considerably older at the time of operation than those operated on in the forward area. A similar high incidence of cerebral abscess after penetrating brain wounds has been noted by the Russians, and they, like us, have had encouraging results in treatment. Ascroft had a mortality rate of 25% in his abscesses. Bakulov (1943) reports that in Russia the mortality for brain abscess in a specialized evacuation hospital has been reduced to 16.8%.

In the last war Cushing recorded a high incidence of brain abscess, but his cases differ from Ascroft's, and presumably from the Russian cases, in the fact that the abscess came on much earlier and was quickly followed by fatal meningitis. Thus, in penetrating wounds Cushing's total mortality from infection was 36.5%, whereas Ascroft's is 10.8%.

Eden's cases provide an unselected sample of wounded as seen at the C.C.S. level. Thus, 28% of his cases had wounds in other parts of the body. Of the head wounds two-thirds were non-penetrating and one-third penetrating. For penetrating wounds his operative mortality was 23.6%, and mostly due to the initial brain damage. In Ascroft's series there were 73 consecutive "fresh" brain wounds flown from Alamein to the base within 24 to 48 hours of injury, and in these the operative mortality was 25%—practically the same as Eden's. Eden was able to follow most of his cases for up to three months, and there were only 5 cases of meningitis and 1 case of brain abscess. Schorstein's results have been similar to Eden's, but thus far he has been able to follow the subsequent course of only a small proportion of his cases.

Compared with Ascroft's series this represents a remarkable reduction in the incidence of intracranial infection, which is to be explained by the fact that Eden got his cases at a much earlier stage and before they had been operated on by the general surgeon. The end-results as regards life were not so vastly different, Eden's death rate from intracranial infection among those who survived the initial effects of the brain injury being 3.7%, as compared with Ascroft's 10.8%. But the low incidence of abscess in Eden's series has meant a considerable lightening of the work of the neurosurgeons at the base, and probably a reduction in the incidence of post-traumatic epilepsy, if we may judge from Ascroft's finding of a close correlation between the incidence of wound sepsis and post-traumatic epilepsy.

Eden's cases are closely comparable with Cushing's: both worked at a C.C.S. and received "fresh" cases mostly less than 48 hours old. Eden's cases show a remarkable reduction of fatal post-operative infection—3.7%, as compared with 36.5%. This cannot be wholly explained on the basis of improvements in operative technique, nor probably on the addition of sulphonamides. Eden's work lay in North Africa and Cushing's was in France. The only figures so far available from a European front in this war—those of Sorgo from Germany—show for a series of wounds treated late an incidence of intracranial infection almost as high as Cushing's. There is another difference to be borne in mind as between Eden's and Cushing's cases: Eden was dealing with an unselected series, whereas Cushing's cases were selected from among the more serious of a large number of head wounds.

All the neurosurgeons whose work is given in Table I appear to have a primary healing rate in penetrating injuries of between 60 and 70%. In many instances this estimate is necessarily based on observation of the wound for no more than one week after operation, owing to the difficulty of retaining patients. This test is far from stringent, for many war wounds break down slightly in the second or third week. Ascroft's figure of 22% of primary healing for old cases refers to the behaviour of a group of wounds operated on in the forward area by other surgeons and subsequently observed by him at the base.

We may summarize the results thus far obtained in North Africa in the treatment of penetrating brain injuries as follows: Of the patients reaching the C.C.S. about 20% die from brain damage within the next few days. If the initial operative treatment is not thorough and an expectant policy is subsequently adopted, about one in every four of those who survive to be evacuated develops brain abscess or meningitis. This is not dissimilar from the results obtained in France in the last war, when there was a 1 in 3 incidence of intracranial infection; but with the important difference that in the last war the intracranial infection was rapidly fatal at the C.C.S. and few cases survived long enough to develop brain abscess at the base. Recent neurosurgical work in North Africa has shown that when head cases can be segregated at the C.C.S. level and can there be radically operated on within 24 hours of injury

* In the battles of Passchendaele in 1917 Cushing dealt with 76 non-penetrating wounds, with 6 deaths. At the C.C.S. at which he was working 50% of the battle casualties with head wounds were passed straight on to the base, and his material was presumably selected from among the more serious cases.

by a fully equipped team of experts trained in the not difficult technique of war neurosurgery, there is a considerable improvement in results: the complication of brain abscess or other forms of intracranial infection can be almost, though not entirely, eliminated.

In modern warfare, where large forces are involved on a wide front, conditions favouring segregation of wounded in the forward area may not occur often, but the advantages to be gained in the way of improvement of results are at present so great that the most forward neurosurgical unit should be mobile and capable at short notice of sending an operating team to the forward C.C.S. In the future, improvements in chemotherapy, and in certain campaigns air evacuation, may diminish the need for head surgery in the forward area; the arrangements are flexible enough to enable our armies to take advantage of such altered circumstances.

Bacterial Infection

Surprisingly little work has been done in the past on the bacteriology of head wounds. In the Sicilian campaign Major Scott Thomson examined material from 36 of our cases and found that all but one contained bacteria (Cairns, Eden, and Schorstein, 1943). The Russians found in 300 head wounds only 2 which were sterile (Report by a Committee of Soviet Scientists, 1943).

In the 36 Sicilian cases, most of which were 3 to 12 days old, the predominating infecting organism was *Staph. aureus.*

TABLE II.—*Brain Wounds 72 Hours Old and Older at Time of Operation*

Surgeon	No. of Cases	Died	Died from Infection	Brain Fungus post-op.	Primary Wound Healing	Remarks
Eden	23	7	2	6	10	Sulphonamides
Cairns, Eden, and Schorstein (1943)	23	3	2	1	6	Penicillin locally
Sorgo (1942)	29	13	10	—	—	Dural closure 19 cases < 72 hours old

Staph. aureus was found in 23, haemolytic streptococci (always with *Staph. aureus*) in 4, and pneumococcus in 1. The other organisms found included *Staph. albus,* coliforms, and clostridia. In the penetrating injuries of this group naked-eye examination at operation, combined with bacteriological examination, showed that the infection most usually began under the scalp or in the temporal muscle and spread inwards to the brain.

Case 1.—Marine P. Penetrating right frontal wound and compound fracture of left tibia three days before. After being wounded he was given 2.5 g. of one of the sulphonamide drugs by mouth. Seven hours after being wounded both his wounds were excised and sulphanilamide was applied to them. Thereafter he had 3 g. of sulphadiazine intravenously, which was repeated after 12 hours for at least two more doses. Three days after being wounded his head wound was reopened at a neurosurgical unit. In the subcutaneous tissue there were isolated streaks of thick yellowish-white pus from which *Staph. aureus* was grown. Elsewhere there was firm healthy-looking clot. When this was removed soft pulped brain tissue containing fragments of bone was found protruding through the hole in the dura. Similar tissue and five bone fragments were sucked out of the brain to a depth of 4 cm. Cultures from the bone yielded *Staph. albus, B. coli,* and diphtheroids.

In 11 of our cases from the Sicilian campaign Major Scott Thomson examined bacteriological material from different levels of the wound. Pyogenic organisms were present in 3 cases at all levels of the wound, in 6 cases in the superficial layers only, and in 2 cases in the brain only. At operation in 10 cases pus was found in the superficial layers of the wound, under the scalp, or in the temporal muscle, but not in the brain; in 3 cases both the superficial layers and the brain contained pus.

Additional evidence is provided by the observation that brain abscess develops usually in those cases in which the wound continues to suppurate, and less commonly in cases in which the skin heals by first intention. Thus, in most cases the infection first develops superficially and then spreads inwards. These observations suggest that early sterilization of the superficial parts of the wound would considerably reduce the incidence of subsequent intracranial infection.

One outstanding question is whether infections on the European fronts are more intense than those in the Western Desert and North Africa. In limb wounds the incidence of gas gangrene has been considerably less in the Western Desert than it was in France in the last war. In brain wounds in the last war Cushing reported gas infection of the brain, and *B. welchii* was cultivated from brain wounds, but no systematic bacteriological examinations appear to have been made. In this war the Russians have recently reported that a large proportion of deaths from brain wounds are due to pathogenic anaerobes (Report by a Committee of Soviet Scientists, 1943). Now, it is well known that many wounds contaminated with clostridia do not develop gas gangrene. Clostridia are found in brain wounds. But the organisms of gas gangrene require anaerobic conditions in which to multiply and become pathogenic, and on theoretical grounds it is difficult to see how such conditions can be obtained in the brain if at operation the brain wound is cleared of necrotic material. It is rare in head wounds for a large part of the brain to be deprived of its blood supply, as happens not infrequently in a wounded limb. Clinically, the cases described by the Russians as suffering from gas infection of the brain do not differ from what we have seen in fatal brain injuries due to Gram-positive cocci. Gas can occur in brain wounds without gas gangrene. That there has been no gas gangrene of the brain in the Middle East is the view of Major MacLennan, O.C. of a mobile pathological laboratory attached to the Eighth Army, who has investigated personally the majority of the cases of gas gangrene which have occurred in the Western Desert and has also studied some 58 head wounds bacteriologically.

This is an important question, on which further information would be welcome, because the Russians recommend the use of anti-gas-gangrene serum in infected brain wounds, though their views on this question are evidently not unanimous (Kadin, 1943).

Operative Technique

A preliminary radiograph of the skull is essential, to show the situation and extent of in-driven bone and metal fragments. The technique of operation has been well described by Ascroft, and there is no need to do more than recapitulate the main points, which are: minimal trimming of the scalp edge; thorough removal of dirt, hairs, metal fragments, etc., from the subcutaneous spaces; removal of bone sufficient to expose the dural opening; and thorough removal of clot, pulped brain, hairs, and bone chips from the wound—also any metal which *happens* to present in the brain wound, but no attempt is made to search for deeply penetrating metal fragments. In removing in-driven bone fragments particular care is necessary when, as shown by radiographs, the bone fragments lie against the medial surface of the cerebral hemisphere or in the neighbourhood of the Sylvian fissure. In these situations dislodgment of a bone fragment may start severe haemorrhage from a cortical artery. When the wound is clean and dry it is dusted with a sulphonamide, and sulphathiazole has been used in some hundreds of brain wounds with no reactions of the kind described by Watt and Alexander (1942) as occurring in uninjured brains. The scalp is closed, as Ascroft puts it, "in the absence of gross sepsis," particular care being taken to avoid undue tension at any one part of the wound, and for this purpose plastic procedures may be necessary.

Eden and Schorstein, if I interpret their work correctly, have concentrated increasingly on the need to obtain firm closure of the wound. They have also dealt in uncompromising fashion with cases already excised and sutured in the forward area. If radiographs still show retained bone chips in the brain—as all too often, unfortunately, is the case—they do not hesitate to re-excise the wound, clean out the brain cavity, and then resuture the wound, a procedure which sometimes entails the most extensive plastic measures.

In certain special situations brain wounds present additional difficulties. Wounds of the sagittal and lateral sinuses may be suspected when radiographs show penetration of the skull or in-driven bone fragments in the neighbourhood of the venous sinuses. The particular danger in these cases is a severe, even uncontrollable, haemorrhage. In such cases blood

transfusion should be quickly available if required, the patient should be operated on with his head raised (there is little or no bleeding from the sagittal sinus in a patient who is sitting up in a dental chair), and removal of the bone around the wound should proceed very cautiously until the blood sinus is exposed.

Wounds involving the eye, the accessory nasal sinuses, and the brain present a special difficulty, inasmuch as it is necessary to repair the dura over the sinuses, as well as to close the scalp wound, in order to seal off the brain cavity. This is an operation of considerable magnitude, involving usually fascia lata grafting of the dura covering the poles and inferior surfaces of one or both frontal lobes. In the acute stage the patient may not be fit enough, or the surgeon may not have time enough, for such a prolonged operation. Schorstein (1944) has recently had considerable success in such cases with vaseline gauze packs after débridement. His results do not bear out Tönnis's gloomy view of the inevitability of meningitis in such cases.

Another variety of case which calls for special treatment is the small, clean, penetrating head wound associated with persisting neurological signs—for example, the parietal wound with contralateral hemiplegia. Such cases are probably best dealt with by an osteoplastic flap which has the wound in its centre, a type of operation which was strongly advocated by the French in 1940 for the majority of brain wounds. In the variety of case which we are now considering the osteoplastic flap is the best means of securing a really adequate exposure of the brain wound and thorough removal of the intracerebral clot which is usually present, sometimes as the result of delayed haemorrhage (late apoplexy). Risks of spreading sepsis of the bone flap are small in such cases, for the wounds of which I am speaking now are usually clean, and the methods of preventing infection by means of bacteriostatic substances are becoming increasingly effective.

Chemotherapy

Sulphonamides have been very extensively applied, both locally and parenterally, in the treatment of war wounds, and it is unfortunate that no large-scale experiment as to their value was undertaken before their use became general. At this stage it would be extremely difficult to introduce a controlled experiment. There are good theoretical grounds for believing that sulphonamides effectively diminish streptococcal contamination of fresh wounds, but their action on staphylococci is weak and there is no evidence to support the view that they are active in the presence of pus. The Eighth Army has developed the use of sulphonamides in the forward area to a high level of efficiency, and there were few cases in the Sicilian campaign which had not had sulphonamides locally, and in the severe wounds parenterally as well, by the time they arrived back in Tripoli and Sousse 2 to 12 days after being wounded. Yet practically all these wounds were infected—the majority with Gram-positive pyogens—and a considerable proportion were suppurating. Thus, of 22 brain wounds 3 to 12 days old, 19 were infected with Gram-positive pyogenic organisms and 13 were to the naked eye purulent. Here are some examples:

Case 2.—Pte. W. T. Multiple wounds, including penetrating right frontal wound. Six hours later excised and dressed with 10 g. sulphanilamide. Sulphadiazine was given intravenously for the next five days, also 5 g. intraperitoneally on the day after injury, when negative exploration of the abdomen was done in the fear that he was developing peritonitis from one of his wounds. Total sulphadiazine, 23 g. On the eighth day, at Tripoli, there was pus beneath the scalp of the right frontal wound (*Staph. aureus*); the other wounds showed no pus or bacterial growth on culture.

Case 3.—Pte. F. S. Left occipital wound. Excised the same day. Dressed with sulphathiazole. Given 34 g. of sulphathiazole by mouth in the next seven days. On the eighth day, when the wound was reopened, free pus was found (*Staph. aureus*).

It might be argued that sulphonamides were given to these patients at irregular intervals and that a good concentration of the drug could not have been maintained. I don't doubt that this is true, but it is questionable whether in the forward area administration of the drug can ever be regular. In the course of his journey back to the forward base the wounded man may go to R.A.P., M.D.S., one or more C.C.S.s, hospital train, or M.A. convoy, aeroplane, or hospital ship. In such conditions it is extremely difficult to maintain even regular administration of fluids.

Although large-scale trials of sulphonamides are now probably impossible in war wounds, I think some useful investigation in a small way might still be done with the head wounds. It would be impracticable to alter practice in the forward area; but at the head centre, taking all cases less than 24 hours old, alternate cases could be done without any further sulphonamides, and the results compared with those which have further sulphonamides. Experience suggests that this would be a reasonable experiment, and if the results showed no significant difference in the two groups, then the 2-day-old cases could be tried, and so on. Such an investigation would at least help to put chemotherapy at the head centres on a rational basis.

Penicillin

Experimental and clinical tests have shown that penicillin is a most powerful bacteriostatic agent, preventing the multiplication of staphylococci, streptococci, pneumococci, clostridia, and other organisms, and not inactivated by the presence of pus. Given parenterally it does not appear in the cerebrospinal fluid (Abraham *et al.*, 1941), though when the meninges are inflamed traces of it may pass through the blood-brain barrier. With the help of Prof. Florey a trial was therefore made by neurosurgical units at Tripoli and Sousse of penicillin applied locally to brain wounds of the Battle of Sicily. Wounds 3 days old or older were chosen because there was not enough material to do alternate cases, and Eden's earlier work had shown that the results of operation on recent wounds by current methods were very good. The method employed was to excise and suture the wound as described above. Before the wound was closed a fine rubber tube was led through a stab-hole into the brain cavity and calcium penicillin solution (250 units per c.cm.) was injected into the cavity twice daily for 4 to 5 days. The average amount used was 15,000 units per case, but in future cases the total dose would probably be smaller. Before each injection the contents of the brain wound were aspirated.

During the battle 25 cases of penetrating brain wound 3 to 12 days old were admitted. On arrival 2 were moribund with large brain fungus; these were not operated on, and they died shortly after admission. Of the 23 wounds 3 to 12 days old, 13 were at the time of operation purulent to the naked eye, some with pus under the scalp or in the temporal muscle, others with pus in the brain and in the superficial layers. Four of the wounds presented a brain fungus. Nineteen of the 22 cases examined were shown to be infected with Gram-positive pyogens. All these wounds—purulent as well as non-purulent—were closed completely, except one in which there was so much skin loss that it was only possible to close part of the wound.

This work will be reported in detail elsewhere (Cairns, Eden, and Schorstein, 1943). By regular examination of the aspirated fluid we found that after two days' treatment Gram-positive organisms disappeared in all except 2 cases. One of these was a case of orbito-mastoid wound in which the wound cavity still remained connected with the middle ear and external auditory canal—an open wound, from which the penicillin solution escaped almost as soon as it was instilled. The other was a patient, reported to have *Staph. albus* on the third day, in whom subsequently a penicillin-resistant *Staph. aureus* was found. This man was suspected of having an abscess, but no sign of anything developed up to 30 days. In all cases Gram-negatives — *pyocyaneus, proteus,* and *coli* — persisted, usually until the discharge through tube or drainage-hole ceased. If the wounds gaped at any point, as sometimes after a week they did, *Staph. aureus* could occasionally be grown again from the raw surface, but did not appear to interfere with healing.

Three of these 23 patients died—one from an intracerebral clot and the other two from infection. One of these had a severely infected 8-day-old left frontal wound with a brain fungus, and in the left frontal lobe in-driven bone fragments and three different brain abscesses from which pneumococcus was grown. He died of spreading cerebral oedema about 48 hours after operation, and at necropsy still had pneumococci in the abscess wall. Penicillin didn't get a long enough application in this case. Possibly it would have been better to treat him

expectantly for a few days, as the Germans have recommended for brain wounds of this age (Tönnis, 1941), but with the addition of local and parenteral sodium penicillin.

The other case was that of a man with an 8-day-old right frontal wound infected with *Staph. aureus* whose pus became Gram-negative under penicillin treatment (in addition to calcium penicillin, applied locally to the brain wound, he had sodium penicillin, 485,000 units intramuscularly, because of a compound fracture of the femur). This man became drowsy and died on the tenth day after operation; at necropsy an abscess was found in the right frontal lobe which had been incompletely tapped during the last days of his illness. This case is a failure of surgical technique, and it shows the importance of maintaining drainage during penicillin treatment.

Wound healing in the 20 survivors, observed for not less than three weeks in all but 5 cases, was by first intention in 6 cases. In 13 there was a slight gape or sinus in the wound, usually at the site of greatest tension, but most of the wounds healed by first intention. These gapes were usually not serious, for only in one case did a small fungus appear during healing.

These results compare favourably with other series of wounds of similar age (Table II), especially when we consider that more than half of the wounds were purulent and would not hitherto have been sewn up. But the series is small and has not yet been followed up for more than 62 days. Brain abscess might still appear in some.

During the Battle of Sicily the opportunity also presented of treating 17 cases of non-penetrating wounds, 1½ to 16 days old, locally with penicillin, usually as a solution, sometimes in powder form. The older cases were heavily infected, with fractures of the skull and bare bone lying at the bottom of a suppurating granulating wound. These wounds and the underlying skull were excised and sutured, and all except two healed satisfactorily, though certain technical mistakes were made at first and temporary sinus formation was not uncommon. In these cases the bacteriological results were not so satisfactory as in the penetrating wounds: in a number the purulent discharge from the sinus continued to show Gram-positive organisms, and these were with one exception cases in which the skull had been fractured. Penicillin is so certain in its effects on Gram-positive cocci, apart from the occasional penicillin-resistant strain, that it is reasonably certain that the solution did not reach all the infected parts. The assumption may be made that there were small foci of osteomyelitis beyond the margin of excised bone. In gunshot wounds exposing and perhaps breaking the skull it is unlikely, when surgical treatment is not immediately available, that good healing will be obtained unless the exposed (and probably infected) bone is very widely excised.

Of penicillin treatment all that we are entitled to say at this stage is that the results are not unpromising. Though penicillin is in great demand and short supply, little is required in the treatment of head cases, and further developments in the technique of its use will be made.

Summary

The treatment of gunshot wounds of the head by neurosurgical units of the British Army in the Middle East and in North Africa is reported.

Three units treated 459 non-penetrating head injuries (wounds of the scalp and skull with dura intact), with 3 deaths.

There were 506 penetrating brain injuries, with 83 deaths. The variation of mortality in the different series depended largely on the level on the lines of communication at which each unit was working.

In penetrating brain wounds, when the initial débridement was incomplete, about 25% of those who survived the immediate effects of brain injury subsequently developed brain abscess. The onset of intracranial infection occurred later than in the case of the 1914–18 war, and a considerable proportion recovered with further treatment.

At the C.C.S. level 28% of head wounds were complicated by wounds in other parts of the body. Non-penetrating head wounds were twice as common as brain wounds. The mortality for brain wounds was about 25%. In "fresh" cases operated on by neurosurgeons the incidence of post-operative intracranial infection was minimal (3.7%).

Of 36 head wounds 3 to 12 days old all but one were found to contain bacteria. The predominating infecting organism was *Staph. aureus* (23 cases). Evidence was obtained that in the majority of brain wounds infection develops in the superficial layers of the wound and spreads thence to the deeper layers.

Penicillin was applied locally to a series of 23 brain wounds 72 hours old, or older, with encouraging results.

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BURNS AND SCALDS IN CHILDREN

AN INVESTIGATION OF THEIR CAUSE AND FIRST-AID TREATMENT

BY

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In spite of a significant reduction in the gross numbers of deaths from burns and scalds under modern methods of treatment, the mortality rate in young children remains relatively high, even when efficient treatment is provided at an early stage. During the past three and a half years there has been an increase in the incidence of burns and scalds in the Edinburgh district, which has aggravated the coincident reduction in the number of available hospital beds. It has long been recognized that burns and scalds as they affect children are largely domestic accidents, and the most hopeful means of securing a further reduction in the number of deaths is by avoiding those conditions which are known to favour the occurrence of thermal injuries. During the period June 1, 1938, to July 31, 1942, 366 children suffering from burns and scalds were admitted to the Royal Hospital for Sick Children, Edinburgh. This report is based on the information obtained regarding the injuries sustained by these children, and is presented in the hope that interest will thereby be stimulated in the social aspects of the problem of burns and scalds, and that suitable preventive measures will be taken.

Causal Agent

Table I gives a list of the agents causing the injury, and indicates that these accidents are almost entirely of a domestic nature. The commonest cause was the upsetting of a cup of tea. The average age in this group was 18 months, and usually the child was being nursed on the lap within easy reach of the tea-cup; sometimes the adult was holding both child and cup when the accident occurred. The injury thus produced is characteristic, usually involving 5 to 10% of the body surface, the commonest sites being parts of one side of the face, neck and chest, one shoulder and arm. Similar but more extensive injuries resulted from the upsetting of kettles (59) or teapots (43): most of these were due to nursing children in close proximity to the table, but a number resulted from the child upsetting a teapot or kettle on a stove, a hob, or a gas-ring on the floor. Saucepans (63) were often on the floor or, when on a fire or stove, the projecting handle was grasped by the child. A child, 2 years of age, fell and sat in a frying-pan placed on the floor. Some of the children who fell into washtubs or baths were just at the toddling stage and lacked proper supervision when in wash-houses and outhouses, and as a rule such injuries were extensive.

The burns fell into 3 groups. The most serious as regard extent and prognosis were those in which the child's clothes

were ignited; 6 out of 30 such patients died. This type was most common in girls, often being due to the hem of a nightgown or skirt becoming ignited as the child reached for the mantelpiece or stood too close to an unguarded fire. Some were the result of the child, or other children, playing with matches. Burns due to contact with fire-bars or hot grates were usually small in extent but deep in degree, and some occurred in spite of a fire-guard; one child, aged 16 months, climbed the fire-guard while unattended

TABLE I

Agents causing Burns and Scalds	Number of Patients	Died
Cup of tea (includes 3 coffee, 3 cocoa)	91	1
Teapot	43	1
Kettle	59	3
Saucepans and other cooking utensils	63	—
Plates of hot food	9	1
Fall into pail of hot water, hot bath, wash-tub, boiler, etc.	20	2
	285 (77·9%)	
Fireplaces, etc.	25	—
Clothing set on fire	30	6
Lighted paper, celluloid combs, etc.	9	1
	64 (17·4%)	
Burst rubber hot-water bottle	5	—
Burst boiler	2	
Poultices	3	1
Stood in quicklime	1	—
Sunburn	1	—
Car accident	1	—
Baby born into pail of hot water	1	1
Feet bathed with boiling water	1	—
Placed on "chamber" containing boiling water	1	—
Cause unknown—"came home burned"	1	—
Burns	68 (18·6%)	7 (10·3%)
Scalds	298 (81·4%)	11 (3·7%)
Totals	366	18 (4·9%)

and fell against the bars of the grate, and another, aged 2 years, was burned while playing with a gas-oven. In the third group, the burn, usually of small extent, was due to the ignition of celluloid combs or similar articles when the child, tiring of them as playthings, poked them into an easily accessible fire; these were serious in that the hands were often the parts most badly affected. The miscellaneous causes call for little comment; 3 out of 17 such patients died.

In the case of patients living within the boundaries of the city of Edinburgh an attempt was made to relate the circumstances of the accident to the home conditions and the geographical situation of the house. This has shown that the incidence is high in certain areas of the city where population is dense. The cases are concentrated in parts of the Old Town and in some parts of the newer municipal housing estates built on the outskirts of the city. This latter observation is important, as it appears to indicate that bad accommodation is not so prominent a factor as the domestic habits of the family. In some families more than one child had been scalded or burned on various occasions, and a few children had been injured more than once. The lives of the parents of these children are hard; families are often large, and it is all too common for the younger children, aged up to 5 years, to be left in the charge of other children only a few years older. This aspect of the problem has become increasingly important with the present difficulties in shopping, part- or whole-time war work, etc.; and is not always relieved by such measures as have been introduced for the partial care of children, since many parents are unwilling to depute the care of their children.

Time Incidence

In 132 cases of the present series there was a record of the time of day at which the injury occurred (see Chart). The peak

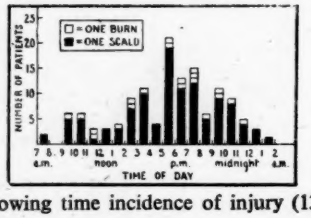

Chart showing time incidence of injury (132 cases)

was reached in the early evening between 5 and 7.30 p.m., which is not unexpected. There were surprisingly few during the morning, but an unduly large number between 9 and 11 p.m. The occurrence of scalds in young children at midnight and 1 a.m. is noteworthy.

Burns and scalds are common during the winter months, but in examining a large series of over 800 cases it was found that admissions might reach an unusually high level in a particular month without relation to the season and for no evident cause. Table II is of interest in showing that the incidence in the last two months of 1939 and the first two months of 1940, when compared with that in the same four months in the previous five years, was found to be nearly twice as great. These numbers have since declined, but are still 40% above the pre-war level.

TABLE II.—*Number of Children suffering from Burns and Scalds seen at Surgical Out-patient Department per Month (1934–42)*

	1934–5	1935–6	1936–7	1937–8	1938–9	1939–40	1940–1	1941–2
Nov.	12	16	10	12	9	22	14	13
Dec.	11	15	12	12	20	24	14	22
Jan.	12	9	16	12	11	29	28	20
Feb.	16	5	16	15	11	22	15	15
Totals	51	45	54	51	51	97	71	70

This increase appears to be associated with the abnormal social conditions existing during these months of 1939–40, such as the closing of schools, cinemas, and other places of entertainment and the lack of recreational facilities, the "black-out," and a reduction in amount and quality of parental supervision of children, due to mental unrest, preoccupation of various kinds, and additional war work.

Age Incidence

In Table III the number of patients and deaths, and the mortality rate at certain ages, are shown. Most injuries occurred in the second year of life: 70% of the patients were less than 3 years and 88% less than 5 years of age. The mortality rate was high in the first, fourth, and fifth years; in the first year fatal injuries were often of small or moderate extent (5, 5, 5, 10, 20% of body surface), while in the fourth and fifth years they were usually extensive (10, 25, 45, 50, 50, 60, 65% of body surface). In the first year all were scalds; in the fourth and fifth years only two were scalds.

TABLE III

Age Group (Years)	Total Patients	Total Died	Burns		Scalds	
			Total	Died	Total	Died
0–1	45	5 (11·1%)	7	0	38	5
1–2	147	4 (2·7%)	24	1	123	3
2–3	65	1 (1·5%)	9	0	56	1
3–4	38	4 (10·5%)	8	3	30	1
4–5	26	3 (11·6%)	7	2	19	1
5–12	45	1 (22%)	13	1	32	0
0–12	366	18 (4·9%)	68	7	298	11

Further evidence on age incidence in children has been obtained from the Reports of the Registrar-General for Scotland, which show that in the years 1931–8, inclusive, 493 deaths, or 40.9% of deaths at all ages from burns, occurred in children of 5 years or under; of the 18 children of the present series who died 17 were aged 5 or less. The only significant difference in incidence between the two sexes was between the ages of 1 and 3 years, when males predominated (136 males, 76 females); the totals for all ages (up to 12 years) were 211 males, 155 females.

Extent of Injury

Thermal injuries may be classified according to their extent, site, and depth. In children the most important of these criteria is extent, since the ratio of surface area to body weight is highest at birth and decreases approximately as weight increases, and the systemic disturbances are usually related fairly closely to the extent of the injury. The danger of certain complications is greater in deep than in superficial burns and in burns affecting the flexures and the neighbourhood of orifices, and these factors were taken into consideration in deciding whether or not to admit patients. Comparison with previous series in regard to extent of injury is difficult, but it is the opinion of surgeons who have treated such patients for many years that more injuries of small extent are now treated in the in-patient department than was formerly the case.

From Table IV it will be seen that in 303 of 366 patients admitted the injury involved 15% or less of the body surface; most

patients with lesions of less than 5% were admitted because of the dangers of complications due to site or depth of the lesion, and none of this group of patients died. Of 244 patients with injuries of 5 to 15% of body surface, 6 died (1 of shock, 5 at later stages); of the remaining 63 patients 12 died (8 of shock, 4 at later stages). As the extent of injury increased so did the mortality rate, but the number of patients diminished. The importance of shock as a lethal factor is closely related to the extent of injury.

TABLE IV.—*Extent of Injury in Relation to Mortality*

Area (%)	Number of Patients	Deaths (All Causes)	Shock	Mortality Rate (%)	
				All Causes	Shock
Less than 5	59	—	—	—	—
5–15	244	6	1	2·46	0·4
15–45	54	7	5	13·0	9.0
50–65	9	5	3	55·5	33·3

First-aid Measures

Information was obtained in 265 cases regarding the first-aid treatment given by parents, relatives, neighbours, passers-by, or medical practitioners. In some cases more than one method had been used. One patient had been treated with four different medicaments—namely, cod-liver oil, flour, and baby powder to the raw surface, and castor oil internally; another had been dressed with carron oil, white of egg, and tannic acid jelly. The 316 substances used on 242 patients are listed below; no first-aid treatment was given to 23 patients.

Substances used as First-aid Treatment on 242 Patients

	Patients
Olive oil	79
Various tannic acid jellies	51
Picric acid	45
Dry dressings, cloths, etc.	23
Flour	18
Carron oil	16
Ointments	16
Castor oil by mouth	14
Flavine emulsion, etc.	8
Baking soda	6
Vaseline	5
White of egg	5
Butter	4
Syrup of figs by mouth; Cloth soaked in tea; Talcum powder; Starch; Cod-liver oil — each 3	15
Eucalyptus; Cold water — each 2	4
Soap; Glycerin; Milk; Vinegar; Calamine lotion; T.C.P.; Boric powder — each 1	7
Total applications	316
No first aid	23

The popularity of olive oil is an important factor, since, if a coagulant or other agent in a watery solution or base is subsequently to be used in the treatment of the raw surface, all the oil must be removed from the burn and adjacent skin, involving prolongation of local treatment and increased trauma to the raw surface. Oily and greasy substances do not appear to reduce the loss of plasma from the raw surface to an appreciable extent, and in some cases their application caused more pain than the initial injury. A variety of tannic acid jellies were used, but in no case was such treatment properly carried out. The commonest faults were the use of hopelessly inadequate amounts of jelly, resulting in the treatment of only part of the affected area, and the failure to cleanse the affected area before applying the jelly. For example, scalds due to the spilling of a cup of tea commonly extend on to the scalp and are always more extensive than they at first appear; before such injuries can be cleansed the hair must be shaved, and in the absence of this precaution infection is invariable. Picric acid is still frequently employed, in spite of the danger of liver damage which is known to be associated with its use. Twenty-three patients did not receive first-aid treatment; most of these were brought to hospital within a short time of injury, and no adverse effects were noticed in these cases. The use of baking soda is based on the common belief that it is soothing; flour and oils are thought to exclude the air. It is widely believed, among the older members of many of the families from which these children came, that a dose of castor oil helps to "put away" shock following a variety of injuries, including burns and scalds. The dose varied, but as a rule the oil was vomited and purging seldom resulted; syrup of figs was also used for this purpose if castor oil was not available. Most of the remaining heterogeneous collection of substances represented all that was obtainable in the circumstances, applied without respect to action or value. Patients whose injuries had been covered only with a dry cloth or dressing were in a better state on admission than those with comparable injuries which had been treated with the wealth of the domestic pharmacopoeia.

Discussion

De Quincey, writing in Edinburgh about a hundred years ago, stated that "three thousand children per annum—that is, three hundred thousand per century; that is (omitting Sundays), about ten every day, pass to heaven through flames in this very island of Great Britain." In a footnote he adds: "Their deaths are chiefly through the carelessness of parents." In spite of considerable advances there is still room for improvement. Donald (1930) reported a steady decrease in the number of children admitted and in the mortality rate at the London Hospital between 1899 and 1920. On the other hand, Wilson (1932) stated that in the Royal Hospital for Sick Children, Edinburgh, the incidence and mortality rate remained fairly steady during the period 1899–1920, but since 1920 the number of admissions had risen steadily, though the mortality rate had fallen. A possible explanation of this increase may be the rehousing of families from the Old Town in the new municipal housing estates at the periphery of the city, which began in 1922. This has resulted in a reduction in the number of patients treated at the dispensaries (Table V). It will be noticed that burns and scalds in children represent 5.6% of all new patients treated, and that this figure has remained remarkably constant in spite of the fall in attendances, indicating that the incidence of these injuries remains much the same in those areas of the city (chiefly the Old Town) served by this dispensary.

TABLE V.—*Out-patient Attendances at a Dispensary*

September to August	Total Out-patients	Burns and Scalds in Children
1936–7	2,034	112 (5·5%)
1937–8	2,104	106 (5·04%)
1938–9	1,357	90 (6·6%)
1939–40	1,299	69 (5·2%)
1940–1	1,708	102 (6%)
1941–2	944	60 (6·35%)
1942–3	793	37 (4·66%)
Totals	10,239	576 (5·6%)

In the present series of children up to 12 years of age the burn–scald ratio is 1 : 4, as compared with Mitchiner's (1933) figures of 1 : 7 in 1933 and 3 : 2 in 1899. It is questionable whether the steady fall in the number of burns since 1899 which Donald reported has been contributed to by the Children's Act, 1908, to such a large degree as he believes. It seems equally probable that changes in environment in respect of fewer gas-lights, oil lamps, and open fires, greater provision for recreation and entertainment outside the home, and improvement in housing conditions have been the important factors. Of deaths at all ages from burns and scalds, 40% occur in children under 5 years of age. In this series 88% of 366 children under 12 years of age were less than 5 years old, and Donald's figures show that 86% of the 1899–1903 group and 88% of the 1924–8 group of children under 12 years of age were less than 6 years old. While the total number of burns and scalds at all ages may have declined, the proportion in children under 5 years of age remains the same. In the present series nearly all the injuries were due to domestic accidents arising out of a combination of the inquisitive and acquisitive instincts, lack of painful experience, carelessness and thoughtlessness of young children, together with inadequate supervision and failure to take preventive measures on the part of parents or responsible elders: actual neglect was extremely rare. These injuries were most common under cramped conditions in the poorer districts, but occurred also in small families living in uncrowded homes.

The limit of the degree to which the gross mortality rate in children can be markedly reduced by therapeutic measures is now being approached. From the evidence which has been cited

there is no doubt that nearly all these injuries can and should be prevented. To this end the following suggestions are made:

1. Intensive propaganda by posters exhibited in public conveyances, hospital and clinic waiting-rooms, schools, and cinemas. Such propaganda should give information as to the number of burns and scalds per year, with mortality rates; and a description, with diagrams, of the ways in which the accidents occur, how they may be prevented, what first-aid treatment should be applied, and where further treatment may be obtained.

2. Closer co-operation between hospital staffs and the social services. All such accidents involving children should be notified to a statutory or voluntary organization dealing with the welfare of children, or to the hospital almoners. The house concerned should be visited within 48 hours by a trained social service worker—preferably a woman—who would inquire into the circumstances of the accident, give advice regarding the prevention of a recurrence, and make a confidential report to the hospital or organization.

There are few, if any, circumstances more distressing than those attending the burning or scalding of an infant or young child. At once all is confusion and concern. While recognizing the difficulties and stress under which home treatment is carried out, the methods that had been employed in this series call for comment. The state of the injuries to which various types of coagulant jellies had been applied was creditable neither to the person who applied the treatment nor to the jelly concerned. When used properly on a suitable case such jellies may be valuable and efficient agents, but their employment by those not conversant with the indications for their use and with their inherent dangers is to be discouraged. A recommendation that the patient be removed to hospital without any form of local first-aid application may be thought callous, but it cannot be too strongly stressed that first-aid treatment of the kinds commonly found in this series is unnecessary, meddlesome, and almost invariably harmful. The guiding principles are two: the treatment of shock already present, and the prevention, so far as is possible, of further shock; the latter implies protection of the raw surface, but not its over-medication. Both principles can be followed by interfering as little as possible with the patient and the lesion. The details of first-aid treatment have been fully stated in E.M.S. Memorandum No. 7, Department of Health for Scotland, 1941.

Summary

A review has been made of 366 children up to 12 years of age, suffering from burns and scalds, who were admitted to the Royal Hospital for Sick Children, Edinburgh, from June 1, 1938, to July 31, 1942, with special regard to the social aspect of the injuries.

The circumstances of the accident, including the time of day, causal agent, age of patient, and the extent of the injury, have been analysed. The results of these analyses, combined with the geographical and social distribution within the area served by the hospital, show that the problem of burns and scalds is primarily a social one, which, it is believed, can best be solved by suitable educative propaganda directed to that part of the community most affected.

The first-aid treatment given to these patients was also examined; in the great majority of cases it had been badly done or was of an undesirable nature.

The mortality rate in this series of 366 burns and scalds was 4.9%.

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Standard rates of pay for all nurses in mental hospitals and institutions in Scotland are recommended by the Scottish subcommittee on nurses' salaries, and the general effect is to increase salaries by 4s. or 5s. a week, thus bringing pay and also conditions of service generally into line with those in England. The starting salary of male nurses will be £2 18s. a week, rising to £4 11s. 6d. as charge nurses; the rates for women are 11s. less. There is to be an additional 4s. a week for nurses on night duty, and a standard working week of 48 hours is suggested, except in the Royal Asylums, where, in accordance with practice, the standard week varies between 48 and 54 hours. Nurses in mental institutions will receive a cash payment of £2 10s. on passing the preliminary examination and £5 on passing the final. Annual leave is to be 21 days. It is hoped that the new scales will result in increased recruitment of nurses for mental hospitals, where training is given not only for the State Register examination but also for the certificate of the Royal Medico-Psychological Association.

HEAT IN THE TREATMENT OF SHOCK

BY

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The application of heat has become fully established as a cardinal principle in the treatment of traumatic shock. It has been believed to exert a favourable influence, mainly by relieving the cutaneous vasoconstriction and thus augmenting the venous return. The possibility that the cutaneous vasoconstriction is a compensatory mechanism and that heat may be harmful has only recently been entertained.

To assess the value of heat in clinical cases of traumatic shock is difficult, for the level of shock is influenced by many variables which cannot be controlled. It seemed useful, therefore, to investigate the effects of heat, as usually applied in the treatment of shock, upon normal subjects. This report relates to such an investigation carried out upon healthy adults exposed to heat under a "heat cradle." While the results cannot properly be regarded as applicable to shock, they do at least suggest that the value of heat in shock deserves further critical assessment.

Experimental Method

Subjects used in this investigation were young adult males who were either convalescent from minor surgical procedures or were awaiting such operations as herniorrhaphy or excision of haemorrhoids. Observations made were: (1) arterial blood pressure; (2) venous blood pressure; (3) pulse rate; (4) oral temperature; and (5) the patient's clinical condition.

The venous-pressure apparatus employed consisted of a No. 19 intravenous needle fitted to a three-way stopcock. This stopcock is connected at one inlet to a reservoir of normal saline and at its other inlet to a manometer of 4 mm. calibre. Venous blood pressure is therefore recorded in millimetres of saline solution. Zero was arbitrarily set at the level of the manubrium sterni. When the apparatus is in use repeated observations can be made, and between these readings a continual drip of saline prevents clotting within the needle. By this method the normal range was found to be 60 mm. to 80 mm. of saline solution and the average resting venous pressure in 40 young adults was 69.5 mm. At least five minutes must elapse after venepuncture before readings can be accepted as being reliable.

Heat was applied by means of the hot-air cradle for one hour, the temperature varying between 38° and 40° C. Observations were made before the application of heat, at ten-minute intervals during its application, and for 40 minutes thereafter. To bring the experiment into line with the treatment of shock, normal saline was administered intravenously to 10 subjects in amounts ranging between 200 and 1,200 c.cm. In 5 other cases plasma was administered intravenously in amounts ranging from 250 to 700 c.cm.

Experimental Findings

The record of Case 5 is given in detail (see Table), with a graphical record (Chart I). The combined records of all cases are shown in Charts II and III. Mean curves are used in place of tables, and it is to be noted that the curves of individual cases approximate closely to the mean.

Certain constant changes were observed: (1) a progressive fall in arterial blood pressure; (2) a rise in venous blood pressure; (3) a rising pulse rate; and (4) a rise in oral temperature. In addition to these findings, however, the most striking observation was the effect of the hour's exposure to heat on the patient's general condition. Three experiments had to be abandoned owing to the severity of symptoms and the resulting anxiety expressed by the patient. In these cases headache, nausea, and exhaustion were prominent symptoms. *Flushing* was evident before the termination of the period of exposure to heat in every case. *Frontal headache* was common, and frequently lasted from 12 to 24 hours after the end of the experiment. In 9 cases symptoms of *dehydration* were present in varying degree—viz., dry tongue, weakness, and thirst. In all cases general perspiration was noted. In 6 cases *nausea* was present, and vomiting occurred in two of these. Other symptoms were abdominal discomfort, muscular

pains, and exhaustion. These subjective effects were not prevented or lessened by concomitant intravenous administration of saline or plasma.

Discussion

It is not the purpose of this paper to give a detailed explanation of the circulatory changes observed. It is suggested, however, that the essential factor is a general peripheral dilatation. This is borne out by the flushing of the face and trunk which was observed in every case. This peripheral dilatation results in a diminution of the pressure gradient between the arterial and venous sides of the circulation. A lowering of the arterial blood pressure and a rise in venous blood pressure are so produced. The increase in pulse rate occurred in all subjects quite independently of their excitability. It may be a direct result of increased pressure on the right side of the heart reflexly producing a rise in heart rate (Bainbridge, 1915).

TABLE I.—*Detailed Record of Case 5*

Time in Mins.	Pulse Rate	V.B.P. (mm. N/Sal.)	A.B.P. (mm. Hg)	Oral Temp. (° F.)	Clinical Notes
0	80	73	130/75	98·2	
10	80	75	130/75	98·2	*Heat on.* Temp. under cradle 39° C.
20	82	50	126/75	—	
30	86	65	120/75	98·3	Patient feels very warm
40	86	80	120/75	98·5	Perspiration on trunk
50	90	88	118/70	98·8	Perspiration on forehead
60	90	96	116/65	99·0	Complains of frontal headache
70	96	104	115/65	99·3	Face flushed. *Heat off*
		500 c.cm. of saline given intravenously during this hour of exposure			
80	90	100	118/68	99·3	Tongue dry; thirsty
90	88	95	120/70	99·2	Sensation of nausea
100	88	85	120/70	99·0	
110	86	85	125/70	98·8	No change in symptoms; headache for 12 hours. Feeling of exhaustion persisted for 8 hours

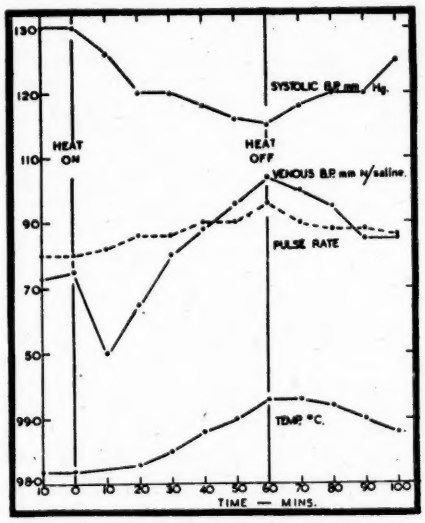

CHART I.—Record of Case 5.

It is considered that the result of this study shakes the confidence which has for so long been placed in heat therapy for patients suffering from traumatic shock. In the normal subjects investigated definite evidence of dehydration occurred after exposure despite the concurrent administration of intravenous fluid. This is not consistent with the aims of treatment for patients already suffering from the effects of fluid loss.

No one has defined adequately the term "shock," although many have their own conception of this complex clinical entity. Most, however, will concede that a lowered arterial blood pressure is present in all but a small minority of cases. These experiments have revealed a constant and progressive lowering of blood pressure when normal subjects were exposed to the hot-air cradle. Most accepted forms of treatment aim at raising blood pressure, and so, for this further reason, prolonged heat must be regarded as harmful.

It is also recognized that in shock there exists arteriolar constriction (Meek and Eyster, 1921). This is primarily a compensatory mechanism. The flushing which was observed so constantly after application of heat indicates peripheral dilatation. In addition to overthrowing the compensatory mechanism this leads to increased fluid loss by capillary filtration, and thus adds to the state of dehydration which already exists and which has been augmented by perspiration.

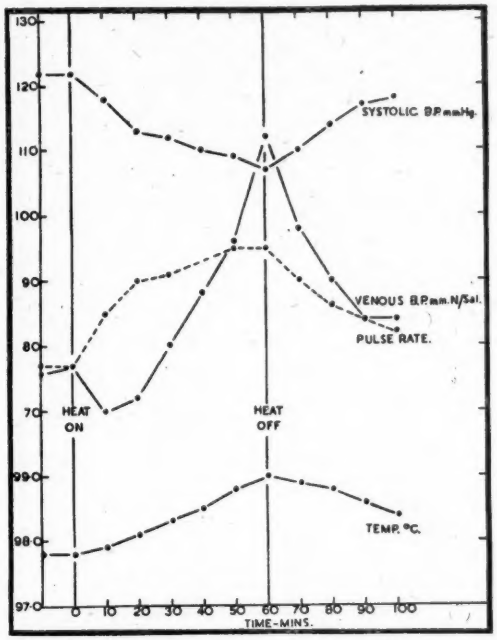

CHART II.—Mean curve of 10 cases receiving saline intravenously.

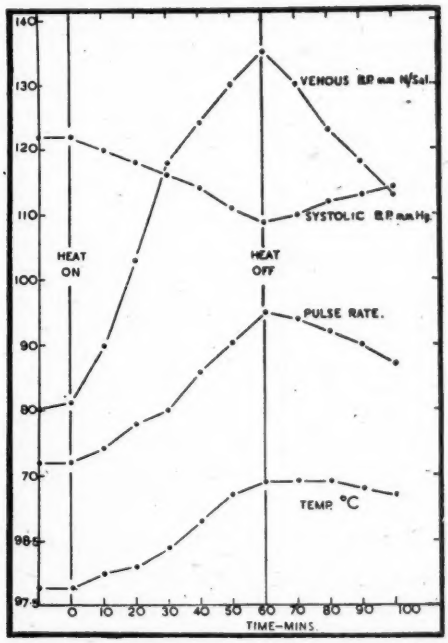

CHART III.—Mean curve of 5 cases receiving plasma intravenously.

Summary

Fifteen normal subjects were exposed for one hour to the hot-air cradle. Intravenous saline was administered to 10 of these, and intravenous plasma to 5.

A progressive rise in pulse rate and venous pressure, together with a progressive fall in arterial blood pressure, was observed in all cases. Symptoms resulted, including nausea, vomiting, dehydration, headache, perspiration, muscular pains, and exhaustion. In certain cases these were severe.

These findings would appear to contraindicate the prolonged use of heat in the treatment of patients suffering from traumatic shock.

I wish to express my grateful thanks to Prof. C. F. W. Illingworth and Prof. Noah Morris for their encouragement and helpful criticism. This work was done while in receipt of a grant from the Medical Research Council.

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INFLUENZA "A": AN ACCOUNT OF A MINOR EPIDEMIC

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On March 30, 1943, a Canadian airman went sick with symptoms corresponding to those known to the lay public as "influenza." He was tired and had slight cough and headache; eye movements were painful and he felt hot and then shivery. On examination his temperature was 102° F., pulse 84, and respirations 18. There was slight pharyngeal inflammation, but no glandular enlargement or nasal catarrh; lungs, heart, and all other systems were normal. He was put to bed. His temperature remained above 101° F. for 36 hours, and then dropped to normal. The patient was fit for discharge within four days of admission.

On April 3 an English officer reported sick with similar symptoms and signs. No special investigations were made, and after four days in bed he was perfectly fit again.

On April 14 an airman reported sick. Symptoms were similar to the previous two cases except for slight harshness in breath sounds at the base on the right side. Temperature was normal after 60 hours in bed. On the third day of illness slight pain was felt in the right side of his chest; breath sounds were diminished, but temperature became quite normal. After two days, as the patient did not seem to be making quick recovery in spite of the normal temperature, he was sent to hospital for *x*-ray, which showed tuberculous infiltration in the right apex, and this result was confirmed by tuberculosis-positive sputum.

On April 16 a W.A.A.F. reported with a temperature of 101° F. She had headache, a slight cough, and a sore throat. Put to bed, she recovered in three days. On the next day an airman reported with similar signs and symptoms, which also cleared in three days; but from that date cases occurred in increasing numbers, as shown on the graph of incidence of the epidemic (Fig. 1). Ten cases were reported on April 21;

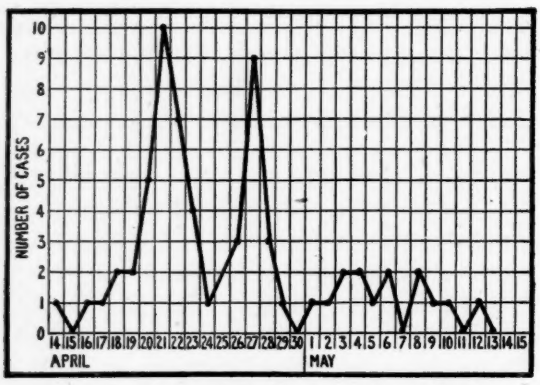

FIG. 1.—Curve of incidence of the epidemic.

it then appeared obvious to us that an epidemic of a virus infection was occurring, and it seemed likely that the infection might be one of true influenza. Investigations were carried out, and on April 23 some of the 30 patients then in bed were picked out at random for (1) chest radiography; (2) differential blood count; (3) throat swab; (4) blood culture; (5) sputum examination; (6) titrations of antibodies in blood against influenza viruses A and B.

By this date the patients being admitted had much severer symptoms and very definite signs. They felt too ill to report sick, and several were found lying on their beds in their quarters feeling very poorly. In most cases headache was severe; there were slight soreness of the throat, nasal catarrh, and some nausea. There was much sweating with shivering betweentimes, and also a variety of severe signs and symptoms which we discuss below.

On examination temperatures were found to be between 102° and 103° F.; the eyes were very red and the faces flushed, suggestive of early morbilli, with, in some cases, enlargement of cervical and submaxillary glands. Tongues were furred, pharynges injected (but with no membrane) and in some cases of a violaceous tinge. In the chest, post-tussive "sticky" crepitations were heard in all areas. Breath sounds were harsh and vesicular in type, with prolonged expiration. Low backache was a feature of most cases. The urine was normal, except for traces of albumin in one or two cases. Of the 12 chests *x*-rayed, seven had no abnormality. Only one showed marked congestion with some consolidation at the right base.

The differential white blood cell count in a typical case was: total white cells, 5,300 (polymorphs 71.5%, lymphocytes 23%, monocytes 5%, eosinophils *nil*, basophils 0.5%). The highest total white cell count was 7,600 (polymorphs 54.5%, lymphocytes 31.5%, monocytes 12%, eosinophils 1%, basophils 1%). Throat swabs in most cases showed moderate growths of pneumococci, *Strep. viridans, N. catarrhalis,* or *Strep. haemolyticus.* Blood cultures revealed nothing. Sputum examinations disclosed little of interest except in the case with tuberculosis.

Titrations of antibodies against influenza viruses A and B by the Hirst method (inhibition of the agglutination of fowl red cells by influenza virus) gave these results:

Case	Sample	Virus A	Virus B
1	I	1/32	1/32*
	II	1/192	1/64
2	I	1/48	1/16*
	II	1/384	1/32
3	I	1/256	1/96
	II	1/256	1/96
4	I	1/96	1/64
	II	1/128	1/32
5	I	1/128	1/32*
	II	1/1024	1/32
6	I	1/64	1/16*
	II	1/1024	1/16

* In each case blood sample I was taken within two or three days of the onset of the disease, and blood sample II about 14 to 20 days later.

Dr. C. H. Andrewes, F.R.S., of the Medical Research Council, under whom Miss K. C. Mills so kindly did the tests, reported: "No case showed a significant change in antibody level against B, whereas four showed a good rise against A. (These have been marked with an asterisk.) As to the diagnosis of Cases 3 and 4, it has been noticed in numerous outbreaks, both in the United States and over here, that cases giving no evidence of infection with influenza A virus turn up in the same outbreak as virus A infection. It has been suggested that when influenza hits, as it sometimes does, a patient who already has good A antibodies the infection may cause no further rise. This may have been the case with Case 3." Dr. Andrewes (1942) has discussed the question in an address.

On April 24 only one case was admitted, but April 27 brought the "crest" of the second wave of the epidemic. Cases admitted after that date became progressively less severe, and only one or two were admitted after May 12.

Discussion

Although only 68 cases actually reported sick it is known that there were many airmen who felt "a bit off colour" during the period of the epidemic and who probably suffered from a "subclinical" attack of influenza A. Of our severe cases, one patient showed chest complications at a very early stage, although by portable *x*-ray findings no pneumonia was actually present. Clinically his case seemed to be quite a definite pneumonia, and was treated as such. Another patient showed as his first severe sign marked and persistent irregularity of the heart rhythm. He was treated with "absolute rest" for three days, at the end of which time normal rhythm without adventitious signs had been re-established. Severe low backache was experienced by two or three patients, and had there not been an epidemic of influenza this might easily have

been mistaken for a renal condition. We would like to point out that had we seen the case with the bad chest or the case with irregularity of the heart or those with the very severe backache at any other time than during an obvious epidemic we would have sent them into hospital under varying diagnoses, and thus almost certainly have spread the epidemic.

We consider that the period of incubation is between 24 and 48 hours, but it may be as high as 96 hours.

Treatment

All patients were placed on a fluid diet on the first day of the disease and all received diaphoretic mixtures. The diet was increased each day, and the diaphoretics were continued until the patients were fit to leave bed. Cough, where troublesome, was treated with a codeine linctus.

Sulphapyridine treatment was resorted to for all patients whose temperature had risen above 103° F. The dosage was 2 g. as an initial dose and 1 g. four-hourly. No patient had more than 8 g., and the temperature was normal in each case before that dosage had been taken. It did appear as though the sulphapyridine had definitely assisted the drop in temperature. The literature gives conflicting reports on the efficiency of sulphapyridine in influenza A, but it seems logical that in a disease in which the temperature is high owing to virus infection and in which most throat swabs demonstrate the presence of pneumococci or streptococci the use of sulphapyridine or some other drug of the group in severe cases is indicated.

The weakness that so many writers describe after influenza was not apparent in this series of cases, and all patients were fully fit seven days after leaving bed. These seven days were spent doing light duties only. There were no serious complications, except in the case proved to have tuberculosis. It may well be that had this patient not developed influenza his tuberculosis would not have been brought to light at the early stage at which it became apparent.

As stated by many writers, the epidemic occurred in two waves; and we noticed also that the curve of incidence of the cases was not dissimilar in shape to an average temperature curve of the severer cases (Fig. 2). It was observed, too, that

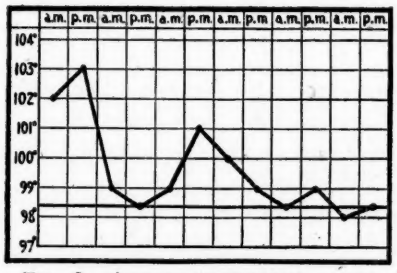

FIG. 2.—Average temperature curve.

the epidemic began in warm dry weather with a mild breeze which persisted from April 14 to April 21. The weather then deteriorated, and there was some rain; but on the 24th it improved, and became quite warm by the 26th. It may be that, somehow, the weather had an effect on the incidence of the disease, as rain fell again on April 28 or 29.

The ultimate object, of course, of the study of any outbreak is to indicate some way of preventing another occurring and, in the case of influenza, especially of preventing such a catastrophe as the 1918–19 epidemic. We can only state that, in our opinion, isolation is of the very greatest importance. Every case of even mild cold that occurs during a known epidemic should be rigidly isolated. By far the greatest proportion of our cases occurred on a satellite aerodrome, and all cases from that aerodrome were taken to the main aerodrome to be nursed in houses separated from all the other buildings on the camp. The only patients reported from the main camp after April 18 were medical personnel and ambulance drivers. Approximately half the medical personnel looking after the cases developed influenza. These medical personnel did not leave sick quarters or associate in any way with other members of the camp. It is probably for this reason that no cases occurred among the thousands of airmen on the main camp.

So far as other preventive methods go, it would certainly be worth while trying experimentally to vaccinate large bodies of men against influenza A a few months before the reckoned time (if it is possible to reckon!) when another epidemic should occur. The work of Horsfall (1939, 1941) in this connexion is especially interesting.

Sterilization of the air by ultra-violet light and propylene-glycol spray has been attempted elsewhere, but in view of our findings that wet weather coincided with the decrease in the waves of the epidemic it may be that simple moistening of the air would have some beneficial effect.

Summary

An account is given of a small epidemic of influenza A.

Indications as to the treatment of such an epidemic when occurring on a military camp are given.

The importance of bearing in mind the possibility of influenza when certain symptoms not normally "textbook" arise, as well as the necessity for excluding tuberculosis, is stressed.

Our thanks are due to Dr. C. H. Andrewes and Dr. A. Morton Gill for the very kind advice and help given, as well as to Wing Commander Hudson, Wing Commander Church, Squadron Leader Wynroe, Squadron Leader Campbell, and our own sick-quarters staff for their great assistance.

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ESTIMATION OF HAEMOGLOBIN BY PHOTO-ELECTRIC ABSORPTIOMETERS

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Changes in intensity of light and in the electric properties of the photo-cell have been advanced as sources of error in the estimation of haemoglobin by means of photo-electric absorptiometers (M.R.C. Report, 1943). This objection to a method which at the moment appears to offer the best means of accurate estimation of haemoglobin may be justified when it refers to absorptiometers which employ a single photo-cell and which indicate the light-absorbing power of the solution by the extent of deflection of a galvanometer. When, however, a null technique is employed with an apparatus incorporating two opposed photo-cells, error due to these changes has been found, in practice, to be eliminated. The procedure by which such error is avoidable can be simply stated without detailed description of method.

Outline of Procedure

The concentration of haemoglobin is measured in terms of the width to which a slit has to be adjusted to pass through the haemoglobin solution that quantity of light which gives a definite output of current from the photo-cell on which the transmitted light is focused. With the light to one photo-cell passing both through the filter whose light absorption in terms of haemoglobin is known and through the adjustable slit set at the haemoglobin value of the filter, the light to the other cell is varied to give a null reading on the galvanometer. The standard filter is then replaced by the blood solution to be measured and the light adjusted by means of the slit till the null reading is again obtained. On replacing the standard filter and resetting the slit to the filter value the instrument should give the null reading. If there has

been a significant change in either or both of the photo-cells or in the light source the null reading will not be obtained, and the light to the balancing photo-cell will have to be readjusted to give a null reading before repeating the estimation. The estimation is reliable only when the null reading is obtained with the standard filter both before and after making the estimation with the blood solution.

As the standard filter and the blood solution do not necessarily transmit the same wave-lengths, it is essential, for this procedure to give accurate results, either that any change in current output from the photo-cell must be the same for all effective wave-lengths or the range of wave-length employed must be so narrow that such a wave-length difference, if it occurs, is without effect.

Our justification for claiming that changes in light intensity and in the condition of the photo-cells need not cause error is this: With an absorptiometer of the opposed-cell type using barrier-layer selenium photo-cells and NaOH–blood solutions, the reading on the instrument for a given solution is unaltered with wide differences of light intensity; further, the haemoglobin value of a solution determined immediately the photo-cells are illuminated is unchanged when redetermined after the apparatus has been in use for some hours, when the condition of the cells has markedly altered (as shown by the galvanometer deflection produced by standard illumination).

Some Observations

In estimating haemoglobin by photo-electric means we have made a few other observations that may be of interest. Certain advantages of the alkaline haematin method have already been advanced by Clegg and King (1942). In some ways the procedure employed in the present work differs from that of other workers. It has been found that accurate measurements can be made with NaOH–blood solutions without the necessity for either heating the alkaline solutions or forming alkaline haematin indirectly by conversion from acid haematin. 0.02 or 0.04 ml. of human blood added to 5 ml. of decinormal NaOH, estimated within five minutes, gives a value greater than 95% of the maximum. For very accurate work it is an advantage to let the solution stand overnight and to use only the supernatant liquid. There is always a slight deposit, but the supernatant liquid gives a constant maximum absorption for about five days. This rapid rate of denaturation is not necessarily true of all bloods. That of the ox, for example, requires some hours for a satisfactory equilibrium to be established.

A further advantage in the use of a strong alkali lies in the fact that while slight clotting in the pipette, which may be undetected by macroscopic examination, causes a considerable error in the absorptiometric estimation of an aqueous oxyhaemoglobin solution, the clot is readily broken down in decinormal NaOH and the supernatant fluid gives a true reading.

The region of the spectrum best suited for accurate photo-electric estimation of alkaline haematin has been investigated, employing a wide range of colour filters. A spectroscopic examination of two alkaline blood solutions, representing extremes of concentration of haemoglobin, show marked differences in light absorption in three regions of the visible spectrum—viz., (1) in the band about 600 mμ, (2) in the long-wave end about 750 mμ, and (3) in the short-wave end to about 495 mμ for the weaker solution and to about 525 mμ for the stronger. Decidedly the best results, as measured by change in photo-cell current with change in haemoglobin concentration, have been obtained in this last region using a Wratten 45A filter, which gives light transmission from 430 mμ to 540 mμ, with maximum at 470 mμ and a smaller transmission in the ultra-violet. This absorption region is not so specific for alkaline haematin as is the 600 mμ band, but the degree of change of absorption with change in concentration of alkaline haematin, as indicated by the photo-cell, is so much greater here than in the 600 mμ band, as delimited by available colour filters, that its use is justified. In estimating total blood pigment, the lack of specificity of the shorter-wave region could be significant only if one were dealing with abnormal blood containing an appreciable quantity of some pigment not convertible to alkaline haematin by decinormal NaOH. Further, in the wave-length range transmitted by the Wratten 45A colour filter the absorption by blood plasma is insignificant, as shown by the extent to which the absorption by decinormal NaOH is increased by the addition of plasma to it. In a series of experiments the addition of 0.02 ml. of plasma to 5 ml. of decinormal NaOH did not, in any instance, increase the absorption by more than the equivalent of 0.1 g. Hb per 100 ml. of blood, and in some instances there was no increase. It is obvious that the plasma plays no significant part in the estimation.

The accuracy obtained in photo-electric estimation of alkaline solutions of blood is highly satisfactory. Replicates of 0.02 ml. from the same sample of blood with an oxygen capacity of about 20 ml. per 100 ml. of blood can be estimated with a standard deviation of 0.1 and with a standard error of 0.04 for twelve estimations. When 0.04 ml. of blood is used the error is less.

In the absence of an absolute standard of reference we have expressed our measurements in terms of oxygen capacity, and have found that the curve relating absorptiometer reading to relative concentrations of haemoglobin, as determined by exact dilution, coincides satisfactorily with that relating absorptiometer reading to oxygen capacities of the same relative magnitudes and determined by the van Slyke manometric method.

From the observations made it seems justifiable to claim that the reliability of the absorptiometric method of measurement here described is such that, provided the blood does not contain appreciable quantities of haemoglobin derivatives inconvertible to alkaline haematin by decinormal NaOH, the only significant errors involved in estimating the total pigment lie in the sampling (Peterson, Strangeways, and Jordan, 1943) and in the lack of an absolute standard.

Summary

An answer is given to the criticism that changes in light intensity and in the electric properties of the photo-cell result in unavoidable errors in the absorptiometric estimation of haemoglobin. Certain facts relating to the accuracy of the estimation are discussed.

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Medical Memoranda

Staphylococcal Pyopneumothorax in an Infant: Recovery

The following case record may be thought interesting enough to merit publication.

CASE HISTORY

A female infant was born of a healthy mother on Dec. 14, 1942, at the West Middlesex County Hospital. The infant weighed 7 lb. 5 oz. at birth and progressed satisfactorily until Dec. 20 on breast-feeds complemented with national dried milk. On that date she developed diarrhoea, with orange stools, and vomited once. She was transferred to the children's isolation ward, where she was found to be slightly dehydrated. She seemed to make a little progress on graduated feeds (glucose-saline, dilute lactic acid milk, and expressed breast milk) until Dec. 31, when she suddenly became much worse, with watery orange stools and severe dehydration. An intravenous drip was necessary to correct the latter, and, owing to the poor oral intake of fluids, was continued until Jan. 6, 1943. By that time she had developed thrombophlebitis of the internal saphenous vein, into which the drip was running. She had a slight temperature for two days, but this subsided when the drip was stopped. She also had two septic fingers and a septic toe. She improved sufficiently to go to the breast, for the mother's milk was coming in better by then. On Jan. 13 she suddenly collapsed at the breast, and was found to be pale, cyanosed, and almost pulseless. Later, when examination was possible, her temperature was 103° F., pulse 140, and respirations 48. The percussion note was impaired at the left base, where bronchial breathing and pleural rub were found on auscultation. A diagnosis of pneumonia was made, and the child was put in an oxygen tent and given a course of sulphadiazine (8 g. in six days).

During the next week the temperature subsided but did not reach normal, and the respiration rate increased. On Jan. 21 slight oedema of the legs was noticed. By the next morning the oedema was so gross that the legs looked like sausages, and the body wall was also dropsical. On examination of the chest the respiratory excursions were found to be minimal, respiration rate 60, heart sounds muffled at the left base and accompanied by harsh crepitations. The apex beat could not be located. A radiograph (portable) revealed gross displacement of the mediastinum, which was bowed out almost into the right axilla. It was thought that this bowing might have kinked the inferior vena cava, thus causing the oedema of the legs.

The child's appearance at this time was ghastly, with half-closed upturned eyes, greyish pallor, scarcely perceptible thoracic movements, a grossly distended abdomen, and swollen legs. The chest was needled at 9 p.m. on Jan. 22 and air rushed out under pressure. About 50 c.cm. was withdrawn. The oedematous legs were scarified and wrapped in sterile dressings. Next morning there was no oedema, nor did it subsequently reappear. Re-exploration of the chest resulted in a small quantity of pus but no air. On Jan. 24 another 50 c.cm. of air and a little pus were aspirated. On the 25th about 20 c.cm. of thick greenish-yellow pus was withdrawn. From the pus on each occasion *Staph. aureus* was cultured.

In view of the large quantity of pus obtained, closed intercostal drainage was decided upon, and at 12.30 p.m. on Jan. 25 a rubber catheter was inserted by means of a trocar without anaesthesia. A considerable quantity of pus gushed out under pressure. The apparent relief was immediate, the respiration rate falling from 100 to 45 in a few minutes. Continuous underwater drainage was maintained for three days, when the pus became too thick to pass through the catheter, so a wider tube was inserted. A radiograph taken on Jan. 28 showed the return of the heart to a more normal position. By the 31st there was very little discharge, and closed drainage was replaced by a short tube draining into the dressings. Between Jan. 26 and Feb. 2, 8 g. of sulphathiazole were given and a suspension of sulphapyridine powder was instilled into the pleural cavity twice a day.

The infant was not yet out of the wood. Her respiration rate had again risen to 70–80; this was partly attributable to the gross abdominal distension, which resisted all forms of treatment, such as charcoal by mouth, pitressin by injection, and the passage of a flatus-tube. The diarrhoea had by this time quite subsided, and she was taking bottle feeds of breast milk well. On Feb. 5 the temperature once more shot up to 103°. The signs suggested a left-upper-lobe pneumonia. There was scarcely any discharge from the sinus, and needling failed to reveal pus elsewhere. She was given yet another course of sulphadiazine (8 g.) and local irrigations with 1/2000 propamidine b.d., but she continued to run an intermittent though subsiding temperature until Feb. 27. On Feb. 13 she was put to the breast, and later resolutely refused bottle feeds; within 24 hours she was for the first time entirely breast-fed. From that time she never looked back, and was discharged on March 8, weighing 7 lb. 12 oz. and gaining steadily. The sinus was by then completely healed.

In addition to the above therapeutic measures she received three transfusions of fresh citrated blood (450 c.cm. in all) on Jan. 25, Feb. 2, and Feb. 19. She also had a course of vitamin B injections (1 mg. daily for three weeks).

Two radiographs were taken after discharge. The first, on March 12, showed that the left costophrenic angle was almost clear, but there were signs of bilateral bronchopneumonia. She was last seen on April 2, when she was a bonny child weighing 9 lb. 9½ oz. (a gain of nearly 2 lb. in 3½ weeks), entirely breast-fed, and showing no signs of her stormy passage except the four transfusion scars, a minute scar at the site of the intercostal drain, and a scarcely perceptible radiographic shadow at the left costophrenic angle.

COMMENT

The pyopneumothorax in this case may be assumed to have been due to the rupture into the pleural cavity of a lung abscess, itself caused by a septic embolus. Staphylococcal lung abscesses have been reported following skin sepsis (the infant had septic fingers from the start), but a more likely source in this case was the thrombophlebitis caused by the perhaps unduly prolonged intravenous drip. The rupture of the abscess into the pleura may be assumed to have occurred on Jan. 21, when oedema of the legs appeared and the signs of respiratory distress became acute.

Features of interest in this case are: (1) the remarkable degree of mediastinal displacement, the presumed cause of the oedema of the legs; (2) the child's recovery from such a severe illness starting at the age of 1 month, when she was not yet through an attack of neonatal diarrhoea—itself having a mortality rate of 80%; (3) the successful establishment of breast-feeding after the mother had been expressing her milk during the month the child was in the oxygen tent.

I wish to thank Dr. Cook, medical superintendent of West Middlesex County Hospital, for permission to publish this case, and Messrs. May and Baker for the supply of propamidine used in irrigations. I would also like to express my appreciation to the nursing staff concerned, and especially to Sister Jones and Staff Nurse Moloney, on whom the bulk of the nursing of this exacting case depended.

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T. C. Jaleski and E. T. Morrison (*Amer. J. med. Sci.*, 1943, **206**, 449), who report two cases in healthy adults, state that congenital heart block is rare, only 80 cases having been described up to 1942. The first case, which had been studied for five years, was a healthy woman, aged 20, with no cardiac symptoms and no other apparent anomalies. The second case was a woman, aged 31, who had been followed from birth and had had no cardiac symptoms except for some syncopal attacks. She had had two normal pregnancies without any serious cardiac disturbance.

Reviews

ALMROTH WRIGHT'S COLLECTED PAPERS

Studies on Immunization. First Series. Researches from the Inoculation Department, St. Mary's Hospital—III. By Sir Almroth Wright, M.D., F.R.S. (Pp. 421. 25s.) London: William Heinemann. 1943.

Some time ago (Aug. 8, 1942) we reviewed a volume containing papers written by Sir Almroth Wright during and shortly after the last war on *The Pathology and Treatment of War Wounds.* This was the first of a projected series of five republications in book form of the work of Wright and his collaborators.

Volume III is entitled, *Studies on Immunization. First Series,* and though a reprint with few changes of a book published in 1909 it actually consists of papers originally published between 1897 and 1908. There are very few living medical authors who could republish so imposing a body of work mainly carried out more than forty years ago, and fewer still, if any, who would venture to do so if they could. The earliest papers are among the most interesting, and almost unconnected with the main subject of the book: that by C. Birt and G. Lamb on the agglutinin content of the blood in what we now call undulant fever, and its variations in the course of the disease, contains much useful information. The rest, which treats of the therapeutic use of vaccines, can be looked upon in one or other of three ways.

It is certainly a convenient reassembly of historic papers, which will save the inquirer trouble in obtaining the originals: during the present scarcity of paper for more urgent scientific purposes this in itself does not seem a sufficient reason for printing such a book. The author's own view, expressed in a foreword written for this publication, is that practitioners not conversant with some of its principles are "not properly qualified to take charge of patients suffering from bacterial infections." In fact he seems to stand by his earlier pronouncements, and would presumably still advocate the treatment of tuberculosis by injections of tuberculin controlled by opsonic index estimations, as well as other forms of vaccine treatment the efficacy of which is not generally admitted. We venture to predict that few readers will accept this judgment. It would be surprising if ideas developed so early in the evolution of a young science remained fully acceptable at the present day, and, as is to be expected, adverse criticism of these papers in the light of more modern knowledge is inevitable. To cite only one example, that which represents serum treatment as vaccine treatment in disguise—it being suggested that bacterial products with which the animal has been immunized are present in the serum and are the source of its activity—cannot be taken seriously. A third way of regarding this publication is as a stimulus to more critical thought and to further investigation. We may disagree with most of it, but it would be more constructive and useful if we had something practical to offer in its stead. We can now successfully treat many acute infections, but we are very much as we were in dealing with many chronic ones. We do not know why they recur or persist in an otherwise healthy individual, in spite sometimes of a high degree of humoral immunity, or at least of every effort to produce it. The only adequate answer to the vaccine doctrine will be to expose the undiscovered factor of which it takes no account.

ASSESSING THE FOSTER PARENT

In Quest of Foster Parents. By Dorothy Hutchinson. (Pp. 145. 11s. 6d.) New York: Columbia University Press; London: Oxford University Press. 1943.

Even before the war many children every year had homes found for them with adoptive parents or guardians by voluntary agencies or local authorities. The need for evacuation from the towns turned into home-finders many thousands of persons with neither experience nor knowledge. This book should have been available at that time, but its value will none the less be permanent and considerable. It fills a want which many workers in this country must have felt. Miss Hutchinson, who is assistant professor of social work in the New York School of Social Work, restricts herself to the choice and evaluation of foster parents who apply to social agencies or to social

workers for children, and to the psychology of home-finding as it may affect both the worker and the foster parents. As she admits, home-finding is only one part of child placement, and knowledge concerning it should be fitted into place in the larger pattern. She rightly regards the reason of a would-be foster parent for wanting a child as a vital indication of what kind of a person he is and what kind of a foster parent he will be; her first chapter therefore deals with the wishes of parenthood and some of the chief emotional patterns that are favourable or unfavourable. She then passes to the situation of the home-finder interviewing a prospective foster mother, and the converse one in which the home-finder visits the prospective home. She gives useful warnings on the assessment of references, and much help in the difficult and sometimes painful task of refusing a foster parent. In the United States home-finding in wartime has been expanded by the needs of families whose fathers have left for military service and whose mothers have to go to work and can no longer give sufficient time to the home. It has not yet assumed the tensity of our evacuation problems. Nevertheless much of what Miss Hutchinson says under this head is fully relevant to us, especially her emphasis on the need for trained social workers to back up the foster parents. She calls her book in a subtitle "A Point of View on Homefinding," and it is a very wholesome and down-to-earth point of view, expressed in clear and readable language. The long extracts from case material and the bibliography, characteristic of American technical literature, are definitely helpful. Every social worker who has to place children should read this book; it will give her not only some useful practical hints but several new slants on this difficult work.

CHOLESTEROL AND THYROID DISEASE

A Clinical and Experimental Investigation of the Blood Cholesterol Content in Myxoedema and Other Conditions. By E. H. Stokes, Ch.M., F.R.A.C.P. Sydney: Australasian Medical Publishing Company.

This small book is the reprint of an M.D. thesis, and though it adds little that is new to the subject, it will prove a useful text for reference for those interested in either cholesterol or diseases of the thyroid gland. The author found a mean serum cholesterol level above 250 mg. per 100 c.cm. in four groups of cases—myxoedema, xanthomatosis, Bright's disease, and diabetes mellitus. Estimation of the serum cholesterol is of great value in the diagnosis of myxoedema, as the level is invariably high in untreated cases and decreases on treatment. It is a better indicator of the disease than the basal metabolic rate because it can more easily be determined satisfactorily without the co-operation of the patient. The hypercholesterolaemia of myxoedema is not due to deficiency of plasma protein, and it is more closely related to the degree of myxoedema than the depression of metabolism. Neither the mucoid infiltration nor the excess of cholesterol is affected by stimulating the metabolism by nitrophenol or nitrocresol, and there is no evidence that they are related to the low blood volume, which is probably a direct effect of the fall in the metabolic rate. The rise in the cholesterol of the blood and the mucinous infiltration of the tissues are difficult to produce by ablation of the thyroid in animals or man, but this may be largely a matter of duration of the disease. Certainly both symptoms quickly respond to thyroid medication, and the blood cholesterol is low in thyrotoxicosis.

Notes on Books

The second edition of Dr. ALFRED PINEY'S *Sternal Puncture* (Heinemann; 15s.) shows a great improvement both in text and in illustrations. It provides for the student a convenient review of information which is scattered over a wide literature. It will have less appeal for the professional haematologist, who may nevertheless have to admit that Piney's somewhat informal approach does seem to appeal to the beginner. And once the student has been successfully introduced to sternal puncture, he can go on learning out of the book of Nature. The pictures of the white cells are fairly uniformly good, but those of the nucleated red cells do not really do justice to the technique and would not be a great deal of help in the actual counting of marrow films. The bibliography might have been preceded by references to some of the general reviews of sternal puncture, such as Bodley-Scott's article and Schulten's monograph, which represent the high-water mark in text and figures respectively. More detail would also have been welcome on the technique of sternal and bone-marrow transfusion, on which Dr. Piney has written interestingly elsewhere.

Sir COMYNS BERKELEY'S *Gynaecology for Nurses and Gynaecological Nursing* has reached a ninth edition (Faber and Faber; 8s. 6d.). This very useful textbook first appeared in 1910. The subject-matter has been thoroughly revised for the new edition, parts have been rewritten and many paragraphs simplified. The author in his preface says he has always taken advantage of suggestions made by reviewers and acknowledges the help thus given to him. Acting on a hint in this column he has taken the opportunity to revise the index, and the main references now appear in heavier type. The appendix on blood transfusion has been remodelled and brought up to date, including a description of the Rh factor.

Dr. E. NOBLE CHAMBERLAIN has now revised his popular *Textbook of Medicine for Nurses* (Oxford University Press; 21s.) for a fourth edition. It continues to give up-to-date information on the medical disorders in a form which supplies nurses with all they need to know on causation, symptomatology, and treatment. It has a good index, a glossary, excellent illustrations, and some useful summaries in tabular form in the appendix. Yet with all this there seems to be something lacking—namely, an outlook which takes in the social aspects of medicine. Two pages on "causation of disease" at the very beginning of the book gives no idea at all of the environmental or psychological causes of disease. The author is too good a physician to be unaware of the new orientations in the medical world; perhaps his next edition will be extensively rewritten with this criticism in mind.

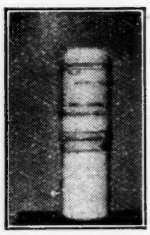
Preparations and Appliances

SULPHANILAMIDE POURER FOR LOCAL USE

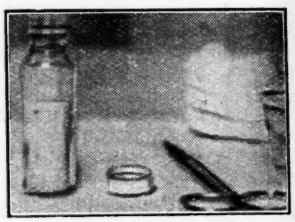
Mr. J. A. EAST, B.Sc., M.B., F.R.C.S., writes:

Mr. Hamilton Bailey and myself have been using the sulphanilamide pourer described here with entire satisfaction. It is simple and efficient, and does not waste powder.

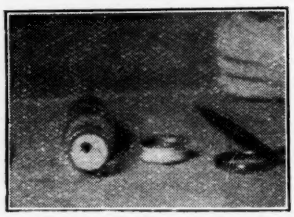
10 g. of sulphanilamide powder are put in a bottle with a screw cap. The bottle has an inner cap with an eccentric hole in it, and is put in a carton and sterilized. The top and the bottom of the carton are held together with a strip of self-adhesive tape.



A. The sulphanilamide pourer as supplied in a carton. The inside of the carton is sterile.



B. The carton is removed and the bottle is dropped on the sterile trolley. The screw cap is shown undone.



C. Top view of the bottle, showing the hole through which the powder comes out.

D. Sulphanilamide powder is being poured on the wound.

When the powder is needed, an "unsterile" nurse opens the carton and drops the bottle without touching it on the sterile trolley. The surgeon can pick up the sterile bottle and use it. Whatever remains in the bottle is still sterile and can be used in the wards.

This pourer, with 5 g. of the powder as above, or containing 0.5 g. proflavine in addition, has been made for us by Genatosan, Ltd., of Loughborough. I thank Mr. P. Berry, medical superintendent of the County Hospital, Chatham, for permission to publish this account.

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SURGERY OF HEAD WOUNDS

The present is a particularly appropriate moment at which to take stock of the results of specialized methods of dealing with war wounds. The North African campaigns with their varying problems of organization have terminated, and sufficient time has elapsed to allow of a useful follow-up. The campaigns of Europe are close upon us, in which it will be necessary to incorporate all the lessons that have been learnt in other theatres. The masterly account printed elsewhere in this issue, by Brigadier Hugh Cairns, of the development, organization, disposition, and activities of our neurosurgical units in North Africa and Libya gives an excellent review of the whole situation. The neurosurgeon in civil practice has long been regarded as unnecessarily slow and "finicky," and indeed has often been the butt of ridicule by the ignorant critic. That his peacetime technique could be successfully adjusted to the urgent demands of battle casualties was thought preposterous. But the end-results of neurosurgical specialists in civil surgery always justified the means, and now in battle-dress they have easily vindicated their methods. In the hands of a properly trained team equipped with suction, diathermy, etc., even the penetrating brain wound has been robbed of much of its terror; provided that operation is not delayed beyond 24 hours, and provided that the brain damage is not lethal, then prospects for recovery are bright and the risk of intracranial infection can be almost eliminated.

The strategical disposition of the units of Ascroft and of Eden and the results of their work have already been published.[1] To these figures Cairns adds those of Schorstein, of Sorgo, and of Cushing. The attainment of primary union in penetrating brain injuries is about the same in each series (65 to 70%), although deaths from intracranial infection occurred more frequently in the cases of Sorgo (30%) and of Cushing (36%) than in those of Ascroft (10.8%), and were least in Eden's (3.7%). The results obtained by the last-mentioned were due in part probably to the highly favourable combination of a special unit working in a forward area, with facilities for the air transport of operated and of less urgent unoperated cases back to a similar unit at the base. This was essentially a split unit with an air link. But, as Cairns points out, this disposition of the neurosurgical resources may not be the full explanation. The location of a battlefield—sited in one case in desert or sparsely populated and cultivated country, and in another case in a heavily populated and intensely cultivated area—may greatly influence the nature and the intensity of the flora of a wound. Elimination of infection from a wound sustained in France or in Russia may be a much more difficult task than in a comparable wound in North Africa. That has yet to be determined. So far the published reports of the bacteriology of head wounds do not give much help in explaining the discrepancy between the results of neurosurgeons in North Africa and those of Sorgo and of Cushing. Pulvertaft[2] stresses the need for a standard technique for sampling the contaminating organisms of a wound, and the variability of the results of culture. He also raises the problem of sulphonamide prophylaxis. How valuable is it—if at all? Most surgeons believe in its efficacy, but Cairns rightly regrets that even now there is no unequivocal evidence of the value of prophylactic chemotherapy, local and general.

Penicillin was used in 23 cases of brain wounds of 3 days or older, and in some there was already pus in the brain, or a brain fungus. Only three of these patients died within the period of follow-up of 62 days. Although this is a small group, it seems clear that the effects of penicillin—when properly employed—are as dramatic in head wounds as in wounds elsewhere. Cairns sees fit modestly to state that the results are not unpromising. As the results of neurosurgeons operating early in the forward area are so good, penicillin may be found to be most beneficial in cases in which evacuation to a special unit is likely to be delayed. It seems probable that its use in full doses on a wide scale in the future campaigns will be of the greatest value in saving life and limiting tissue destruction by infection and the consequent disabling sequels. It is to be hoped that supplies will be ample, that the best technique for application will rapidly emerge, and that adequate control series are available so that the evaluation of results will be convincing.

The organization of neurosurgical units in the great campaigns imminent in Western Europe will be a difficult task, and doubtless the A.M.S. have their plans well laid, applying the lessons learnt so far. The problem is seen on a small scale in the comparison between the location of the units of Eden and of Schorstein; the former was in a "bottle-neck," while the latter was much less favourably situated to "tap" the flow of cases and to obtain segregation. If the principle of segregation continues to be accepted—and results amply justify it—then broadening of the front and widening of lines of communication will necessitate a great number of special units. At this point it is well to note the influence of air transport on this problem. Contrary to accepted neurosurgical teaching based on the experiences of the last war, it was found in North Africa that cases could be evacuated 2 to 3 days after operation without any deleterious effect. This is highly significant, and there may be two factors operating. Infection in France in 1914–18 was of a more fulminating character than that in the present series, and the deterioration ascribed to transport may in fact have been due to latent infection, possibly aggravated by transport. The other factor, probably the more important, is the nature of the transport, and in Africa air transport was employed, with its correlated speed, comfort, and lack of jolting as compared with road and rail. Therefore if sufficient trained personnel were available, the successful solution might be

[1] *Lancet*, 1943, **2**, 689.

[2] *Lancet*, 1943, **2**, 1.

found in a multiplication of units of Eden's type—a split unit with an air link.

The alternative, as Cairns indicates, is for the general surgeon to deal with all but the more difficult wounds. If the general surgeons are to do this work successfully, then it is essential that they receive proper training and equipment, and it is equally essential that they should be convinced individually of the need for acquiring the small but important details of procedure termed technique. To quote Eden: "There is no doubt that the surgeon who first operates on an open brain wound makes or mars it. There is no useful first-aid operation." He and Ascroft give all the necessary details, and Ascroft rightly emphasizes the need for painstaking care over the minutiae which seemingly waste time: "Time is saved by not skimping the preliminaries. Careless placing of the patient on the table, niggardly shaving, and indifferent arrangement of the drapes all make for slow and wearisome operating." And this care is as necessary for scalp wounds as for penetrating injuries. That this technique justifies itself is borne out again and again in civilian and in military surgery, and has often been brought to notice. Eden obtained primary union of scalp wounds in 97% of cases, but this was obtained in only 50% of similar cases passed to him after operation by general surgeons. The respective figures for wounds with dura intact were 84% and 12% and for brain wounds 71% and 25%.

In order to undertake his share of the work the general surgeon should be given adequate opportunity for training. One cannot help feeling that in this direction—at any rate so far as neurosurgery is concerned—the A.M.S. have shown an incredible lack of foresight and of imagination during the last three years. A few courses in neurosurgery of warfare have been held, which can have been attended by only a minute fraction of Army surgeons; and such courses, good as they may be, can never compare in value with the first-hand experience afforded by living in a special centre for, say, a month. The great potential reservoir of tuition presented by the E.M.S. special head centres has been virtually untapped. It should in all fairness be made clear that the E.M.S. neurosurgeons have been clamouring for years, without response, for this opportunity of giving instruction to military surgeons.

If instructions are issued that the general surgeon shall perform only a "first-aid operation" as far as the dura, it is important that opinion should now be crystallized as to the best procedure. Should the superficially excised wound be left open as recommended by Ascroft? Or should it be closed, for fear that final operation may be delayed more than three days? Many secondary débridements were performed after a considerable interval, with remarkable recoveries in cases in which the wound had been closed at the primary operation in the forward area. Local application of penicillin may provide a solution to this question, and one wonders whether the local application of powdered proflavine in this type of case has had due consideration. Its use has been condemned, but the comparison of its necrotizing effect upon the experimental animal's brain with its effect on potentially infected and grossly traumatized brain seems hardly fair (Russell[3]).

[3] *Lancet*, 1943, **2**, 580.

There is still divergence of opinion about certain other operative details. In practically all the North African cases the wound was drained for 24 to 48 hours, especially when the operation created a deep cavity in the brain. The dural tear was never repaired except in those few cases in which the wound also involved the paranasal sinuses. Sorgo drained only those cases in which operation was delayed more than 24 hours. He advocates closing the dural defect, if necessary with a fascia lata graft, and dural closure may have an important influence upon the incidence of residual brain infection. If, as Cairns suggests, infection develops first superficially in the scalp, and then spreads inwards, closure of the dura would be an advantage. On the other hand, it is clear from Eden's and Ascroft's papers that they would consider such a procedure liable to accelerate brain infection. Perhaps a combination of both methods will prove advantageous—dural closure, with a drain into the cavity between the stitches of the graft. If the insertion of a graft diminishes the amount of mesoblastic scar invasion of the brain, and thus lessens the incidence of epilepsy, then this addition to the operation would justify itself.

There is no doubt that the neurosurgical organization in North Africa and Libya has paid valuable dividends, and it is a pleasure—and one hopes not a presumption—to comment here upon the high standard of case-recording maintained under the pressure of action. Such records are the life-blood of worth-while follow-up statistics. Those who have been privileged to care for cases invalided back to this country have perused with interest and with amazement the detailed and excellent notes. It is the signature of efficiency.

AETIOLOGY OF CONGENITAL PYLORIC STENOSIS

Congenital pyloric stenosis is not, perhaps, a common disease, but it is common compared with most hereditary abnormalities. There are a number of striking facts about its aetiology. In the first place boys are much more often affected than girls. Secondly, there seems to be a strong tendency for those affected to be first-born children. For example, Still[1] found that 48% of a series of 400 were first-born. Moreover, it is a congenital abnormality highly dangerous to life which yet can be treated with much success. Cockayne and Penrose[2] in an admirable recent investigation found that out of 221 children treated, the families being visited after an average lapse of 6½ years, 170 were alive, and in most cases appeared to be perfectly healthy.

The difficulties of investigating the aetiology of a condition of this type are not small. To take one point—the supposed susceptibility of the first-born child—it is evident that hospital data alone can provide little evidence because so many of the children with congenital pyloric stenosis are not only the first in their families but also, at that time, the last. In order to study this and other points thoroughly, Cockayne and Penrose decided to attempt to follow up after the lapse of ten years the families of 434 consecutive cases (mostly treated at St. Thomas's Hospital and Great

[1] *Lancet*, 1927, **2**, 795, 853.
[2] *Ohio J. Sci.*, 1943, **43**, 43.

Ormond Street Hospital for Sick Children). It is not surprising to learn that it did not prove possible to visit more than 212, and that the interval was not, on the average, more than 6½ years. Nevertheless, valuable data have been collected and the results are remarkably interesting.

There is no doubt about the hereditary nature of this abnormality or that it depends upon a recessive gene. There is a significant excess of consanguineous marriages among the parents, as would be expected in a relatively rare recessive condition. Though the familial incidence is much smaller than the expected 1 in 4, it is real. Evidently, however, the susceptible child—that is, the child bearing the abnormal gene pair—is not always affected. Cockayne and Penrose are able to show that the additional factors determining the appearance of the abnormality are those previously suspected—viz., sex and being a first-born child. Affected boys are six times commoner than affected girls. The question of primogeniture is much more difficult to study. In the key paper on the calculation of family size Greenwood and Yule[3] showed that the families selected by reason of the presence of one abnormal member give an erroneous impression of size, and so, if appropriate allowance is not made, first-born children will always appear to be unduly numerous among affected persons. Even the method of Greenwood and Yule requires further modification when the interval, as in this case, between the birth of the affected child and the tabulation of family number is relatively short. Making the necessary allowances, Cockayne and Penrose leave little doubt that primogeniture is indeed an important factor. It is a good example of the difficulties of human material and of how an extensive investigation and refined statistical methods are often needed to settle a problem which at first sight seems simple. Another point about family order is that it is closely associated with maternal age; hence it is far from easy to determine which of these two factors is actually responsible. Penrose[4] devised an ingenious method for discriminating between the two possibilities. He then showed that in the classical instance of mongolism it is maternal age that is important and that order of birth is without effect. In congenital pyloric stenosis the reverse is shown to be true. Being a first child is what counts and not the age of the mother.

The results of this investigation are plain and leave little room for doubt. The underlying cause of congenital pyloric stenosis is the possession of a pair of abnormal genes, one received from each parent. Should the recipient chance to be a boy and first-born, he will almost certainly have this abnormality. In other words, if the first child of carrier parents is a boy, his chance of being affected is the Mendelian 1 in 4, as in albinism or amaurotic idiocy. Subsequent children who receive the two abnormal genes, or any daughter, even if she is first-born, are more likely to be normal than affected. This is a point of considerable practical importance. Cockayne and Penrose found that some parents had limited the family after the patient's operation because of the fear that another child might have to undergo the same treatment; yet the chance of a subsequent child being affected is not more than one in twenty.

[3] *J. statist. Soc.*, 1914, **77**, 179.
[4] *Ann. Eugenics*, 1934, **6**, 108.

DEATH OF DR. ANDERSON

We have to announce with deep regret, which all members will share, that Dr. G. C. Anderson, Secretary of the British Medical Association, died in hospital on the night of January 1 from heart failure following the attack of coronary thrombosis which laid him low on October 23. From the day he joined the staff at headquarters in 1919 he gave himself with abounding energy and enthusiasm to the Association and the profession, and in their service he wore out a fine physique. Our personal loss cannot be measured in words, but a memoir of Dr. Anderson, with some tributes from Officers of the Association past and present who have had very close relations with him, appears in this week's *Journal*.

HEAT IN THE TREATMENT OF SHOCK

In the last war the shocked wounded were vigorously heated because they were cold. The application of radiant-heat cradles became an accepted principle of treatment. It was claimed, as a result of heat therapy, that the pulse improved in volume. Between the two wars, however, accumulated evidence cast doubts on the wisdom of heat in the shocked patient. Extensive studies by Lewis's school on the blood vessels of the skin showed that heat produced a great increase in blood flow through the skin, and that the vessels of the hand took a very large share of this increase. The skin of the human hand is, in fact, an important temperature regulator, similar to the ear of the rabbit. It would be surprising, therefore, if the application of excessive heat did not bring about an "improvement" in pulse volume at the wrist. We must question, however, whether an increased blood flow through the skin is a desideratum in shock, where the blood pressure is low as a result of acute loss of blood. Bazett[1] has estimated that 500 c.cm. of blood may be diverted into the warm skin. In addition to the increased flow through the skin, blood flow through muscle is also increased by heating (Barcroft and Edholm[2]).

Taking cognizance of these considerations, Blalock and Mason[3] in crude but striking experiments on dogs showed that *excessive* heat was harmful and accelerated death. Cleghorn[4] has demonstrated in careful and painstaking studies on dogs bled to a blood-pressure level at which the expected mortality was 40% that the optimum external temperature is 72° F. At this temperature 18 out of 22 animals survived; at an external temperature of 95° F. only 1 out of 14 survived. Man and dog, however, are different species, and more observations are required in normal human subjects and in patients suffering from different types of "wound shock." Brown, Evans, and Mendelssohn[5] mentioned a slight fall of blood pressure on the application of radiant-heat cradles. Kay, in our current issue, now demonstrates in "normal" convalescents a fall in arterial pressure and a rise in venous pressure in response to heating. These effects can both be explained by peripheral vasodilatation. Such observations, however, mark only the beginning, and much remains to be done. Is the cardio-acceleration on heating a direct temperature effect, or does it result, as Kay suggests, from increased venous return exciting a Bainbridge reflex? Are rises of venous pressure in the peripheral veins of man paralleled in magnitude by changes in pressure in the right auricle? If the increased peripheral circulation is part of a general

[1] *J. Amer. med. Ass.*, 1938, **111**, 1841.
[2] *J. Physiol.*, 1943, **102**, 5.
[3] *Arch. Surg.*, 1941, **42**, 1054.
[4] *Canad. med. Ass. J.*, 1943, **49**, 363.
[5] *British Medical Journal*, 1943, **1**, 66.

increase in minute volume flow, at what stage of reduced blood volume does heating cease to improve the general circulation and increase the peripheral flow only at the expense of vital internal organs?

The study of such circulatory reactions in injured and normal man not only will improve our management of the injured but will add richly to our knowledge of human physiology. The techniques of study developed by Cournand and his colleagues[6] show the way in which these problems may be approached: their bold, brilliant, and apparently safe technique of intracardiac catheterization seems to open a new era in the research study of human cardiodynamics. Research by this method in severe shock would sweep away much doubt and obscurity. Meantime, as a practical policy in the treatment of shock, we must accept the evidence that overheating is harmful, and agree that a comfortable external temperature environment is probably best.

WAR IN THE NURSERY

War nurseries are now in the limelight of controversy. Clearly all is not well when an authority such as Dr. Helen Mackay, after careful investigation, has to report a high incidence of infection and a low incidence of happiness. Although this statement has evoked protest from an experienced nursery teacher, there is ample evidence, from other good teachers and nurses, of grave distress among their children. Unhappily for the "under-fives," the characteristics of their age make them peculiarly sensitive both to any disruption of the family situation and to the fact of war. Children are born as little savages whose destructive and aggressive impulses are primarily diverted to social ends through love relationships, formed first by intimate contact with the mother, and extended in widening circles to others within the home until, upon the pattern so established, contacts are made with the larger world of human society. In the years from 2 to 5 the battle between love and primitive impulse is at its height. Dr. E. Benjamin[7] describes this as the "Age of Resistance." Winnicott, Bühler, Isaacs, Bowley, and others all note the turbulent characteristics of the age. Anna Freud, in her report of the admirable Hampstead nurseries, quotes a saying, half-joking but significant—"There is continual war raging in the nursery"—with reference to the violently aggressive tendencies normal in the early years. Such tendencies are the growing-pains of the parent–child relationship. In the course of natural development they are outgrown if wisely handled within this relationship. Separation from home cuts at the root of the little child's intrafamily situation which is the basis of his social development. No longer has he the incentive to sacrifice his unclean habits, his tempers, and general devilry that he may secure his mother's love. This he has always feared to lose, and now in his immature judgment it is already lost, or why should she have abandoned him to others? In such a desperate situation he must either withdraw into anxiety and depression, or in self-preservation, as it seems, he must rage more furiously.

At the present time there is the added danger that the destructive impulses let loose in war may serve to fan the flame of aggression natural to the nursery age. Bombing, killing, burning are all accepted by adults as meritorious when meted out as retribution to the wicked enemy. These are the terror-making fantasies of early childhood come true, provoking further fear and reactive resistance to a world so dangerous. It is small wonder that the nursery situation is a difficult one, that children are often unhappy, and the nerves of staff strained to breaking-point. Some notable nurseries, which lay much stress on mothering their temporary orphans, have proved that in many cases it is possible to overcome difficulties, but these must be recognized to be resolved. If they are not, asocial or anti-social behaviour remains as a fixed protest. The "Age of Resistance" may thus be prolonged to adolescence or adult life in the form of bitterness, irresponsibility, or delinquency.

[6] *Surgery*, 1943, **13**, 964.
[7] *Amer. J. Dis. Child.*, 1942, **63**, 1019.

NO NEWS BUT THE OLD NEWS

A letter in the *Times* of Dec. 31 reminded us that 1943 saw the centenary of the publication of the *New England Quarterly Journal of Medicine and Surgery*, which was edited by Charles E. Ware, M.D., and Samuel Parkman, M.D. This journal was published in Boston and came to an end after a year. In its April issue appeared the article by Oliver Wendell Holmes entitled "The Contagiousness of Puerperal Fever." This had previously been read before the Boston Society for Medical Improvement. Tales from medical history are always worth retelling, even one so familiar as the story of puerperal fever. As the exciting causes of puerperal fever have been tracked down in detail only recently, it is of interest to note that nearly 101 years ago Oliver Wendell Holmes began his paper thus: "In collecting, enforcing and adding to the evidence accumulated upon this most serious subject, I would not be understood to imply that there exists a doubt in the mind of any well-informed member of the medical profession as to the fact that puerperal fever is sometimes communicated from one person to another, both directly and indirectly." A little later in his paper he states his thesis in this way: "The practical point to be illustrated is the following: *The disease known as Puerperal Fever is so far contagious as to be frequently carried from patient to patient by physicians and nurses.*" (The italics were his.)

Semmelweis, who shares with Holmes what one might call the honours of puerperal fever, became an assistant in the first obstetric ward of the Allgemeines Krankenhaus in Vienna in 1846, and in 1847 published his work on the aetiology of epidemic puerperal fever. Garrison, in his *History of Medicine*, pays due tribute to Semmelweis and Holmes, and also to Charles White of Manchester, but makes no mention of the work of Dr. Alexander Gordon of Aberdeen, so generously acknowledged by Holmes in his original paper. Dr. Gordon published a treatise on puerperal fever in 1795. Evidently his observations had been, as Holmes points out, "occasionally copied into other works." It may therefore be of interest if we follow Oliver Wendell Holmes's example of giving exact quotations from Dr. Gordon's treatise:

> "This disease seized such women only as were visited, or delivered, by a practitioner, or taken care of by a nurse, who had previously attended patients affected with the disease."
>
> "I had evident proofs of its infectious nature, and that the infection was as readily communicated as that of the small-pox or measles, and operated more speedily than any other infection with which I am acquainted."
>
> "I arrived at that certainty in the matter, that I could venture to foretell what women would be affected with the disease, upon hearing by what midwife they were to be delivered, or by what nurse they were to be attended, during their lying in: and, almost in every instance, my prediction was verified."

Modern workers have in effect done little more than dot the i's and cross the t's of this story, by stating in exact terms just what the infection is.

THE MODERN TREATMENT OF GONORRHOEA IN THE FEMALE*

BY

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Gonorrhoea in the female is similar in many respects to that in the male, but in some ways is of considerably more importance, since many women suffer from the disease without knowing it and therefore probably convey it to a greater number of people than they would otherwise. Incidentally, too, gonorrhoea not only may infect the eyes of the child during its passage through the birth canal but is also a very common cause of sterility, mainly as a result of salpingitis causing occlusion of the Fallopian tubes. In the case of gonorrhoea in a married woman consent should be obtained to tell the husband not only in order that he may be examined and, if necessary, treated, but also to avoid the risk of marital infelicity should he find out accidentally; in the case of a girl under 21 the parents should be told if circumstances appear to demand it. Such action is likely to prevent difficulties arising later, especially if the girl should become engaged to be married. It is a great mistake to adopt a policy of secrecy, and all those who are, or are likely to be, involved should be told in confidence.

Diagnosis

The signs and symptoms may be much the same as in the male—that is, a discharge of greenish-yellow pus accompanied by pain on micturition—but often the latter is entirely absent, and it must be remembered that discharges of various kinds are regarded by many women, especially multiparae, as hardly abnormal.

Place the patient in the lithotomy position and separate the labia majora; note any discharge from the vulva, vagina, and urethra, any swelling or inflammation of Bartholin's glands, and any discharge from their ducts. Swab the vulva clean and dry; pass the first finger of the gloved left hand into the vagina and draw it forward along the floor of the urethra; by this means any discharge will be brought to the urethral orifice; near this latter look for any discharge from Skene's ducts. Next pass a speculum (Cusco) into the vagina and open it to bring the cervix uteri into view; note any erosion of the external os; clean the cervix and surrounding parts with a swab—dry or soaked in weak alkaline solution if there is much mucoid secretion—and note any discharge coming from within the canal. Take specimens for smear and culture from *within* the urethra and cervical canal and from any discharge from Bartholin's ducts. Examine uterus and adnexa bimanually to ascertain if pelvic inflammation, especially salpingitis, is present.

In cases of acute gonorrhoea gonococci are easily demonstrated, but in chronic cases they are often difficult to find; if gonococci are not in evidence at first, further examinations should be carried out at short intervals. Gonococci are most likely to be found *immediately* after a menstrual period (some clinicians recommend examination *during* a period). Such examination should be repeated monthly, if necessary for three months, before gonorrhoea can be excluded. It is most important to take cultures as well as smears, since the flora of the vagina are very numerous and varied and it is often quite impossible to say whether gonococci are present or not from the examination of smears alone. In chronic cases a gonococcal complement-fixation test (G.C.F.T.) is often helpful, but in acute cases this will usually be negative unless the disease has been present for some time or complications are present; a positive reaction is valuable, but a negative one does not exclude gonorrhoea.

In acute cases examination of the urine, as in the male, will frequently reveal a haziness due to pus if the patient has not passed water recently; specimens may be made from centrifugalized urine for bacteriological examination. In chronic cases diagnosis is often very difficult, and can be established only by repeated careful examination and taking of specimens; the latter are best taken with a sterile platinum loop or a dressed Playfair probe. No lubricant should be used when passing a speculum, since this may inhibit the growth of gonococci in cultures. In all cases it is wise to look for trichomonas vaginitis at the same time, as this is a very common accompaniment of gonorrhoea and, if present, is apt to delay cure unless vigorously treated.

Treatment

Early acute cases usually react well to chemotherapy, but old-standing chronic cases, especially where the cervix uteri and perhaps the pelvic organs are involved, are often very difficult to cure. The general practitioner will do well to remember this and not undertake the treatment unless he feels thoroughly competent to do so. If the patient is married it is most important that the husband should be examined and, if necessary, treated; if husband and wife are both infected they should obviously both be treated, as otherwise repeated re-infection may occur. In any case it is the moral duty of any physician treating a case of communicable V.D. to endeavour to trace the source of the infection and bring him or her under treatment.

General Treatment.—This should be on the same lines as for males; rest during the acute stage and careful personal hygiene are most important.

Chemotherapy.—Sulphathiazole 4 g. a day (1 g. four times a day) for 5 days—total 20 g.—will cure the great majority of acute cases, and the fluid intake should not be less than 6 pints. Where the patient can be kept under the physician's eye—e.g., in hospital—a rather higher dosage may be employed. Bolton (1943) recommends 7.5 g. the first day and 5 g. daily for the succeeding four days—total 27 g., the patient being kept in bed during the period of chemotherapy. In either case if the first dose is given early in the morning and the last dose late in the evening there is no need for one during the night. Should a second course be necessary an interval of seven days should be allowed to elapse and preferably the type of sulphonamide changed—e.g., to sulphadiazine or sulphapyridine; a blood count should be done before starting a second course. Intolerance and its treatment are the same as in males. The urine should be rendered alkaline with sodium bicarbonate to prevent haematuria, and if symptoms are acute tincture of hyoscyamus minims 20 and tincture of belladonna minims 5–10 three times a day may be prescribed.

Local Treatment.— In acute uncomplicated cases this is rarely indicated beyond that necessary for personal hygiene—i.e., frequent hot baths, to which alkalis may be added, and the keeping of the affected parts dry and clean. In chronic cases, and especially those which do not react to the sulphonamides, irrigation of the urethra and bladder may be carried out as in the case of males; but routine vaginal douches are to be deprecated, dry or moist swabbing being preferable. It should be remembered that in adult females vaginitis is not a prominent lesion, the brunt of the disease falling on the urethra and cervix uteri. The vagina and cervix should be swabbed, dry or with a mild antiseptic, using a Playfair probe dressed with cotton-wool, and, following this, the whole surface should be dusted with powder applied by means of an insufflator. Cervical erosions should be treated, after clearing the secretion away, with weak alkali, with topical applications, applied by means of a Playfair probe, care being taken not to pass the internal os. Probably the best substance is glycerin, and this may be used neat or in the form of glycerin of borax or glycerin of ichthyol 5%; other applications recommended are mercurochrome 1%, picric acid 1% in spirit, and acriflavine 0.5 to 1%. These applications should be carried out daily in subacute cases and once or twice weekly when the condition is chronic, ringing the changes on the various preparations. Cystic swellings (ovulae nabothi) are treated by puncture. As an adjuvant to chemotherapy the insertion of two tablets of acetarsol at bedtime is very helpful, or the vagina may be insufflated daily with this drug in powder form or with powdered sulphanilamide; local treatment should be carried out by the nurse or the medical officer himself wherever possible. Sulphonamide-resistant cases often call for pyretotherapy, applied by means of a fever cabinet or protein injections (e.g., T.A.B. vaccine) as described for males.

Complications and their Treatment

Many of these react well to chemotherapy, but a closed focus—e.g., a Bartholin's abscess—should be drained. When serious complications occur it is wise to refer the case to a specialist

* Written by request in continuation of the article on gonorrhoea in the male which appeared in the *Journal* of July 17, 1943 (p. 72), and for the same reasons.

if they do not clear up under chemotherapy. When chemotherapy fails the following measures may be adopted:

1. *Skenitis.*—This is an inflammation of the gland ducts opening on either side of the urinary meatus; the ducts should be destroyed with the electric cautery or fused silver nitrate, or injected with tincture of iodine, 10% silver nitrate, or 10–20% mercurochrome.

2. Urethral caruncle, which forms at the meatus, should be excised or cauterized.

3. *Bartholinitis, or Bartholin's Abscess.*—The gland should be dissected out or the abscess laid open freely.

4. *Salpingitis, Oophoritis, and Pelvic Peritonitis.*—If acute the patient should be put to bed in the Fowler position and treated on expectant lines; as soon as the acute symptoms have passed off, hot vaginal douches may be given once or twice daily, and, when the chronic stage is reached, two or three times a week. Operation is rarely called for if the infection is purely gonococcal; if in doubt call in a gynaecologist.

5. *Metritis and Endometritis.*—In the acute stage treat as for salpingitis. When acute symptoms pass off, treat as for cervicitis; dilatation of the cervix and the insertion of a glycerin drain are often helpful.

6. Other complications, arthritis, etc., are dealt with in the same way as in males.

7. Trichomonas vaginitis, which, as has been said, is a very common accompaniment of gonorrhoea, should be treated from the first; it is troublesome to cure and very apt to relapse. Its presence should be suspected in those cases of gonorrhoea which fail to clear up in the ordinary way.

Tests of Cure

These are even more essential than in males, because conclusive evidence of cure is so much harder to obtain. Gonococci have a way of disappearing under treatment and reappearing after treatment has been stopped, more especially at the menstrual periods; apparently they may lie dormant in the endocervical glands for very long periods. One or two tests should be carried out at four-day intervals following completion of treatment, and then monthly for at least three, and preferably six, months before the patient is discharged as cured. These latter examinations should be carried out immediately after a menstrual period, since it is at this time that gonococci, if present, are most easily detected. The following procedure is recommended:

1. Clinical examination, including smears and cultures from the vagina, urethra, Bartholin's ducts, and the endocervix. Specimens should also be taken from the rectum, as this is often infected in females. The importance of cultures cannot be overestimated, but it is essential that a suitable medium be employed.

2. Examination of vagina and cervix through a speculum.

3. Examination of the urethra through a urethroscope.

4. Bimanual examination of the pelvic organs, including uterus, tubes, and ovaries.

5. G.C.F.T.—This is of particular value when the disease has been chronic, if there have been complications, or if a previous positive result has been recorded.

During the period of observation in the case of a married woman, if intercourse takes place the husband should employ a sheath, not only for his own protection but in order that impregnation should not occur. A woman should not allow herself to become pregnant until the fact of cure has been established with as great a degree of certainty as possible.

Pregnancy and the Puerperium

The treatment of gonorrhoea during pregnancy is similar to that already described, but it is important to exercise the greatest gentleness both in taking specimens and in carrying out instrumental treatment in order to avoid the risk of inducing an abortion or miscarriage. Douching should be avoided and, owing to the fact that the discharge is often profuse, care should be taken to keep the genital area dry with dusting powder to avoid excoriation. Sulphonamide drugs are not contraindicated—pregnant women tolerate them well—but anything likely to cause a general reaction should be avoided. When labour starts an endeavour should be made to cleanse the birth canal, as it is particularly important to avoid risk of infection of the eyes of the infant; they should be treated thoroughly as soon as it is born.

If fever occurs during the puerperium it is possible that the gonococcus may be responsible; if the interior of the uterus is involved a catheter should be passed, with aseptic precautions, up to the fundus and glycerin or glycerin and iodine instilled through it. The patient should of course be kept in the Fowler position.

Gonorrhoea in Female Children: Vulvovaginitis

The vagina of the adult is lined with stratified epithelium and is therefore relatively resistant to the gonococcus; but that of the young female is lined with delicate columnar epithelial cells, and is very susceptible to infection. Infection may occur at birth direct from the mother's secretions or at any time up to puberty through the medium of infected articles such as towels, napkins, underclothing, baths, and instruments. Criminal assault is a not uncommon cause.

Signs and Symptoms.—In the case of young females the brunt of the attack falls on the vagina, though the urethra almost invariably and the cervix frequently are also involved; the vulva is usually red and inflamed, and may be excoriated; discharge is often profuse and there is considerable discomfort. Specimens for bacteriological examination should be taken as in the adult, but it will often be impossible to pass a vaginal speculum; in such cases a urethroscope as used for the adult male is most useful for examining the interior of the vagina and the cervix. It must be remembered that the majority of cases of vulvovaginitis are due to causes other than the gonococcus: these include other organisms (staphylococci, streptococci, etc.), parasites, and trauma; a diagnosis of gonorrhoea should therefore not be made unless the gonococcus is demonstrated. The anal canal and rectum are commonly involved, and these should be examined carefully in all cases.

Treatment.—It should be remembered that this disease is extremely contagious and may easily spread rapidly through a community of young girls; the patient should therefore be isolated and the communal use of toilet articles forbidden; all contacts should be examined and every endeavour made to find and treat the source of the infection. Chemotherapy is the treatment of choice, and the disease usually reacts well. Sulphathiazole should be prescribed in dosage according to age and weight (0.5 g. per 15 lb. of body weight)—i.e., one-quarter to half a tablet three times a day in early life, rising to one tablet three times a day at the age of about 5 years; the usual precautions as to side-effects must be taken. Frequent hot baths and scrupulous cleanliness of the affected parts—keeping them as dry as possible—are indicated; but local treatment should be avoided so far as is possible, as this has a bad psychological effect and may lead to masturbation. Where indicated, local treatment is similar to that for adults, the cervix being treated through a urethroscope. When other methods fail an attempt to encourage the formation of resistant epithelium may be made by the administration of ovarian hormones; but this is a matter for the expert. Cases of vulvovaginitis are notoriously difficult to cure, and are very liable to relapse; treatment should therefore be continued, except in those cases which react well to the sulphonamides, for some time after all gonococci have disappeared, and tests of cure should be carried out over considerable periods, particular attention being paid to the rectum.

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THE ORDER OF ST. JOHN

Two reports, the covers of which bear the white eight-pointed cross of the Order of St. John, have been received from the Chancery of the Order in the ancient gateway of St. John's priory at Clerkenwell. One of them is a report of the Chapter-General of the Order on the progress of its various modern foundations—namely, the St. John Ambulance Association and the St. John Ambulance Brigade at home and over-seas; the other gives an account of the ophthalmic hospital of St. John in Jerusalem, the city where the original Order was founded during the first Crusade. There were critics years ago, both before and after the incorporation of the English branch of the Order by a charter granted by Queen Victoria, who described it as sham-Gothic and absurd, but every critic must by now have been won over by the disciplined humanitarian work of this venerable institution.

Work of the Association and Brigade

The St. John Ambulance Association issued just upon 120,000 first-aid certificates last year and nearly 25,000 certificates for home

nursing. It organized a very large number of classes for the instruction and examination in first aid of members of the Home Guard and of the Civil Defence services. Over 100,000 of those who hold the certificate present themselves for re-examination yearly. The current textbook of the Order, since its appearance in 1938, has reached a circulation of 2¼ million copies. The Brigade, too, is flourishing, with an increase during the last year in this country alone of 20,000 members, bringing the total to 167,000. In the Provinces, particularly in the smaller towns, the casualty services are largely manned by St. John's personnel, assisted by the British Red Cross Society. While their help in dealing with casualties is only occasionally required, they must always be ready to answer a call. Another activity of the Brigade is the motor ambulance service, which continues to render valuable assistance to the civil population. The number of cases conveyed in a year runs into six figures. The Brigade enlists the services of 3,000 surgeons, many of whom, in addition to their Brigade duties, are also serving in Home Guard units and at first-aid posts. We can well believe that many local authorities who are responsible for the posts regard those which are under the control of the Brigade surgeons as the most efficient in their area.

It is just fifty years since the first division of the Brigade was established over-seas—in New Zealand—and now there are reports from all the Dominions and from many of the Colonies of encouraging progress, while Australia has just attained the dignity of a "commandery." In Bombay members of the Brigade put in 75 hours of consecutive duty when a large building collapsed causing many deaths; they rendered first aid to 342 persons. A special word should be said about the members of the Brigade serving in Malta, who have had to stand the strain of 2,000 air raids.

Ophthalmic Hospital in Jerusalem

The ophthalmic hospital in Jerusalem was founded sixty years ago, and last year it had 20,000 new patients and the total number of consultations was 125,000. In addition to its work in the ancient city it is responsible for ten ophthalmic clinics attached to Government hospitals in outlying centres in Palestine, from Acre and Safed in the north to Gaza and Beersheba in the south. These are staffed by medical officers and nurses, the latter obtaining their ophthalmic training during a four-months course at the hospital. The Government in Palestine is taking steps to minimize eye disease by means of propaganda films which are sent through the villages, and in these the value of the hospital service is given prominence. It is mentioned by the warden, Dr. Norman Manson, that the incidence of trachoma among the out-patients of the hospital was 89.3% last year, but that the neglected and virulent type of trachoma which was common even ten years ago is not often seen. Acute conjunctivitis continues to take its yearly toll in the summer epidemics that ravage the Near and Middle East. Excellent work is being done by the hospital, and a recent visit by the Duke of Gloucester, the Grand Prior of the Order, gave the workers much encouragement.

GRANT-IN-AID PLAN FOR HOSPITAL SERVICE

King Edward's Hospital Fund for London has sponsored a Hospital Service Plan whereby people of moderate means, in return for their subscriptions, may receive grants-in-aid towards the payment of hospital charges and medical fees. A non-profit-making company—the London Association for Hospital Services, Ltd.—has been created to operate the plan.

The method depends upon a system of monthly, quarterly, or annual subscriptions, or, if preferred, by arrangement with employers, of deductions from pay. Subscribers are required to undertake payment of subscription for one year, after which membership is renewable annually. Grants are made towards the cost of six weeks' treatment received by the subscriber or by his or her dependants up to a total of one hundred guineas in any one membership year, and the eligibility for such assistance begins six months after the effective date of enrolment. Applications are invited from all persons up to sixty years of age, regardless of their rate of income, provided that they live or are employed within the metropolitan area. The rate of subscription varies according to the number of dependants. For the single subscriber it is 4s. 4d. monthly, and for the subscriber with four dependants it is a maximum of 8s. 9d. Only one adult dependant may be registered by each subscriber. A schedule of rates of repayment for nursing-home charges, fees of physicians and surgeons, anaesthetist's services, and other forms of investigation and treatment is published, but a considerable number of classes of treatment—including, for example, primary consultation fees, maternity treatment, and medical cases normally treated by the patient's own doctor in the surgery or at the patient's home—are excluded from liability. It is agreed that full cover is the desirable ideal, but until that can be undertaken the present grant-in-aid scheme is believed to fill a distinct need.

The scheme has been prepared with the full approval of the voluntary hospitals and of the British Medical Association, whose secretary is a medical member of the council of management. There are, naturally, a number of conditions attached to an insurance scheme of this nature, but they bear every evidence of having been carefully thought out so as to afford as much benefit to the insured person as possible. Particulars can be had from the offices of the London Association for Hospital Services, 10, Old Jewry, E.C.2.

FURTHER INCREASES IN NURSES' PAY

Publication of the second report of the Rushcliffe Committee on Nurses' Salaries means that the salaries of all nurses in England and Wales except those in mental hospitals have now been reviewed. (The recommendations affecting hospital nurses were noticed in these columns on Feb. 27, p. 264, and for midwives on Aug. 21, p. 242.) The latest report covers nurses in the public health services, in residential and day nurseries, district nurses, and male nurses, and like the earlier one recommends national salary scales to apply throughout England and Wales, which will in most cases mean substantial increases.

Nurses in the public health services include health visitors of all grades, school nurses, tuberculosis visitors, and nurses in V.D. clinics, and the proposed new salaries are: for a health visitor, £270, rising by £10 a year to £360; superintendent health visitor, £360 to £550 according to the numbers supervised; tuberculosis visitor, £270–£360; school nurse, £220–£310; nurse in V.D. clinic, £250–£320.

The committee concurs in the view long held by the medical profession that the pay of district nurses has never been commensurate with their responsibility, and it proposes that a State-registered district nurse living in a district nurses' home shall receive £120 a year, rising by £10 to £180, the total value of salary and emoluments to be £220–£280. A similarly qualified district nurse living at home or in rooms should receive salary and emoluments of £230–£300. The village nurse-midwife (S.C.M.) living in a district nurses' home is to receive £100–£170 (total value of salary and emoluments £200–£260), and if she lives at home a total of salary and emoluments of £210–£270.

As regards nurseries, the committee has confined itself to recommendations affecting State-registered nurses employed in day or residential nurseries, and for these the new salaries suggested are £170, rising by £10 to £240, with emoluments of £100 in addition, for the matron of a residential nursery housing 40 or more children and having students in training. Where no training is given the salary should be £150–£220, with the same emoluments. A non-resident matron should receive £195–£305 and her deputy £165–£255. The salaries of male nurses, who number some 2,000, mostly employed in London, will be £7 14s. 6d.–£9 10s. 6d. a week for a qualified senior tutor, £6 5s. 6d.–£7 5s. 6d. for a superintendent nurse, and £5 0s. 6d.–£5 15s. 6d. for a staff nurse.

Other recommendations of the committee concern uniform, holidays, and sick pay. These are all comparable with similar recommendations in the earlier report, and will result in a welcome uniformity in the different branches of the profession. Throughout the report the need for refresher or "post-certificate" courses is emphasized, and suggestions are made for grants to enable nurses to attend such courses. Two criticisms are to be noted: (1) the committee does not consider that three months' experience in tuberculosis nursing is sufficient qualification for a tuberculosis visitor; (2) the committee has found that no statutory qualifications have been laid down for school nurses; it recommends that the appropriate Departments give attention to these matters. The new scales are to be retrospective from April 1 last, and the Ministry of Health, which is asking all employing authorities to put them into effect, is to make a grant of 50% of the additional cost (100% in the case of nurseries) provided the recommendations are adopted in their entirety. The Board of Education is following the same course for the school medical services.

RETRAINING OF DISABLED PERSONS

The increased attention so rightly given to rehabilitation of the injured person, culminating in the second reading in the House of Commons of the Disabled Persons (Employment) Bill, has called forth a reminder from the L.C.C. that rehabilitation has been part of the Council's medical services for the past thirteen years. It employs a large number of masseuses and physiotherapists and has established two special fracture centres, one north and one south of the Thames, where the latest advances in the treatment of fractures are put into practice. Occupational treatment, organized games, and physical exercises, together with special treatment for those in whom there are psychological hindrances to recovery, have been features at the Council's two convalescent homes—Queen Mary's, Sidcup, and Princess Mary's, Margate.

Many hundreds of disabled persons have been restored to whole or partial self-support at the L.C.C.'s training centres for patients

from its hospitals, while there are special arrangements whereby those suffering from neurosis and also the psychotic and higher-grade mental defective receive treatment and are helped to find suitable employment. Tuberculous patients who, though improved in health, cannot compete in the open labour market are accommodated at Papworth and Preston Hall, and for some years now the Council has subsidized the Spero workshops. As long ago as 1938 a survey was made of all those on long-term relief with medical certificates of unfitness due to neurosis. Most were found to be receiving adequate treatment, but as many as possible of the others were taken into occupation centres for gradual retraining. Good work has also been done among young and "improvable" vagrants; by the elimination of physical disabilities numbers have been retrieved from vagrancy. Then there is the education, including craft training, which is given to the physically defective in the Council's hospital and day schools. Thousands of young cripples have been successfully absorbed into industry since these schools were started 45 years ago. To-day hospital patients undergo a final hardening process before discharge. Those confined to bed for long periods are given regular exercises to keep up muscular tone, but as soon as they are up they go to physical training classes and to the workshops, where a great variety of work, from bookbinding to carpentry, is done. Occupation for the mind is provided in discussion groups and lectures. There are three L.C.C. hospitals where special provision is made for cases of war neurosis.

MATERNITY AND CHILD WELFARE SERVICES OF LONDON

Large readjustments of maternity services in London are forecast in a report by the London Maternity Services (Voluntary Organizations) Joint Committee, which represents voluntary hospitals and district nursing associations undertaking midwifery within the Metropolitan Police district. There is now a shortage of maternity beds in the outer London area. The population of outer London—that is, London outside the L.C.C. area—is larger by some half a million than the population within the county, and yet, in a pre-war year, the number of maternity beds in that outer area was only half the number available in inner London.

The requirements of the metropolitan teaching hospitals have to be considered, however, before any general transference to the periphery is proposed. On the pre-war basis of 5,000 medical students taking their training at the London teaching hospitals, and of 700 taking their course in midwifery each year, with the requirement that each of them should deliver a minimum of 20 cases, 14,000 confinements, intern and extern, would be needed for their adequate training. In the committee's view, in post-war planning it would be unwise to allow for more than 1,500 to 2,000 district cases (extern). Moreover, it is probable that the number of undergraduates will increase in the immediate post-war years. Hence it is thought that at least 700 maternity beds, allowing for approximately 14,000 institutional confinements, should be reserved for the teaching of medical students.

The general conclusion of the committee is that in post-war planning additional midwifery accommodation should be provided towards the boundaries of the L.C.C. area and in outer London, and that the existing maternity beds in central London should be readjusted so as to ensure that adequate teaching provision is made for medical students. It is suggested that the Metropolitan Police district should be divided into areas, taking into account existing borough boundaries and the maternity facilities available, and arranging for each district to have a key hospital. The suburbs would be served by small maternity units working as annexes of the key hospitals. It is also urged that there should be close liaison between voluntary hospitals and local authorities on all questions relating to the future provision of midwifery accommodation and services so as to avoid wasteful overlapping and to ensure that beds are provided where they are most needed.

The key hospitals would be well-equipped maternity units with a minimum of 100 beds and accommodation for antenatal and post-natal in-patients. A unit at or connected with a general hospital should have not fewer than 50 beds. Until these units can be provided small maternity homes and private nursing homes now in existence must continue to serve obstetric cases, and an endeavour should be made to arrange for close co-operation between them and the key hospital of their area. At present there are no large voluntary maternity units in the north-west, south-west, or south-east of the County of London, but there were enough maternity beds in central London before the war, and if the teaching hospitals accept the recommendation of the Royal College of Obstetricians and Gynaecologists to provide their own maternity units, this will mean an addition of some 350 beds in this area. The committee therefore suggests that if as part of this plan the three lying-in hospitals in the centre of London—the City Maternity, East End Maternity, and the General Lying-in—could see their way to move towards the boundary of the L.C.C. area, and if the L.C.C. would agree to provide obstetric units in connexion with its hospitals in north-west, south-west, and south-east London, instead of on their present sites, the County of London would be surrounded by maternity hospitals which could, with some extension and improvement, serve as key hospitals for the outer London area.

Proposed Unifying Board

After a review of the various components of the existing maternity and child welfare service, directed and controlled as they are by a number of different organizations, the committee proposes the setting up of a new authority to be appointed by the Ministry of Health and to bear some such name as the Maternity and Child Welfare Board for Greater London, with its appropriate place in the maternity section of a national health service. All the bodies concerned, including voluntary hospitals and consultants and general practitioners, as well as the local authorities, would be represented on the board, and a small executive should be set up with professional and technical panels, consisting of people with special qualifications as authorities on the subject and with experience of some branch of maternity or child welfare. This board would have power to make recommendations concerning the distribution of funds made available by the Government for this work in both voluntary and municipal institutions, and it would be responsible for all matters of policy affecting maternity and child welfare.

If the maternity service of London is to be really efficient, with no overlapping and no break in continuity in the care and supervision of the mother and her child, the arguments in favour of such a board, based on a partnership between voluntary organizations and local authorities, seem to be incontrovertible.

MEDICAL RESEARCH IN EIRE

The Medical Research Council of Ireland (85, Merrion Square, Dublin) has made the following grants:

Whole-time Awards

Dr. Vincent C. Barry. Fellowship in organic chemistry to undertake an investigation into the chemotherapy of tuberculosis; work to be carried out in the Chemical Department of University College, Dublin, under the direction of Prof. T. J. Nolan and the Council's Chemotherapy Committee.

Dr. Michael Flynn. Fellowship to undertake an investigation into the typhoid carrier condition; the work to be carried out in the Department of Bacteriology, University College, Dublin, Grangegorman Mental Hospital, and the Dublin Fever Hospitals, under the direction of Prof. W. D. O'Kelly and in collaboration with the resident medical superintendents of the hospitals concerned.

Dr. Patrick A. McNally. Fellowship in bacteriology to undertake an investigation into the chemotherapy of tuberculosis; work to be carried out in the School of Pathology, Trinity College, Dublin, under the direction of Prof. R. A. Q. O'Meara and the Council's Chemotherapy Committee.

Dr. Diarmuid Murphy. Fellowship to undertake an investigation into the methods of production of penicillin, in the Botany Department, University College, Dublin, under the direction of Prof. J. Doyle, and in collaboration with Mr. Oliver Roberts.

Grants-in-Aid

Dr. Bryan Alton. For expenses in connexion with an investigation into the bacteriostatic effects of products of *Penicillium notatum* and other moulds, in the Department of Bacteriology, University College, Dublin, under the direction of Prof. W. D. O'Kelly.

Prof. T. W. T. Dillon. To enable him to employ technical assistance in his investigation of the problem of diuresis.

Prof. W. J. E. Jessop. For technical assistance for section-cutting in his research work.

Dr. A. G. G. Leonard. To enable him to maintain records of pollution by sulphur dioxide and suspended impurity at Merrion Street and at the Albert Farm, Glasnevin.

The following have had their grants renewed for further periods: Prof. R. A. Q. O'Meara, Mr. P. J. Boyle, Dr. O. FitzGerald, Mr. D. J. Hingerty, Dr. D. K. O'Donovan, and Miss E. O'Donovan.

ROYAL COLLEGE OF SURGEONS

THREE HONORARY FELLOWSHIPS

Major-Gen. W. H. Ogilvie has just returned to England after a visit to the United States and Canada, where he was authorized by the President and Council of the Royal College of Surgeons of England to present diplomas to the surgeons of these countries who had been awarded the Honorary Fellowship but who were unable to visit England at present.

On Oct. 30 Prof. Norman Strachan Shenstone of Toronto was admitted as an Honorary Fellow in the Governor-General's House in Ottawa. The Governor-General, the Earl of Athlone, himself an Honorary Fellow of the College, presided at the ceremony, and H.R.H. Princess Alice honoured the College by attending. A distinguished company was invited to Government House for the occasion.

On Nov. 8 Major-Gen. Ogilvie presented diplomas of Honorary Fellowship to two American surgeons, Prof. Robert Bayley Osgood and Prof. Evarts Ambrose Graham. The ceremony took place in the British Embassy in Washington. His Excellency the Ambassador, Viscount Halifax, presided, and a distinguished company was invited to attend.

Introductory Remarks by Major-Gen. Ogilvie

The Royal College of Surgeons of England stands in direct succession to a series of learned bodies who have striven, since the search for knowledge first began to replace the unquestioned acceptance of tradition, to further the science and art of Surgery. According to their lights, and within the limitations that the state of learning and material prosperity of their times imposed upon them, these guilds, societies, and corporations made it their concern to encourage the pursuit of learning, and to establish a high professional and ethical standard among their members and associates. Our College is proud of its stewardship during the years that it has been responsible for maintaining these traditions, and it has endeavoured to advance surgery in the related fields of research, of education, and of examination standards.

In research we have been helped by many generous benefactions, among which those of Bernhard Baron and Buckston Browne stand out in recent years. The Bernhard Baron laboratories occupying two floors of the College buildings in Lincoln's Inn Fields, and the Buckston Browne experimental farm in the grounds of Darwin's house in Kent, have given young surgeons a unique opportunity to follow John Hunter's famous advice, "Don't think: try the experiment." In education we have always been proud of having the best surgical museum in the world, and a library that is complete in its files of surgical books and periodicals. We have endowed lectures and demonstrations, single and in series, that provide a forum from which advances in surgery and allied sciences are made public. In examinations we are concerned with the standards of surgery and have two diplomas: the Membership of the College, which, with the Licence of the Royal College of Physicians, provides the most widely sought qualifying test in the United Kingdom; and the Fellowship, a hall-mark of surgical knowledge which is awarded after two examinations whose severity is proverbial.

The Fellowship of the Royal College of Surgeons stands high, partly because it marks the successful passage of this severe scholastic test, still more because the body of Fellows represent all that is best in the surgery of the British Commonwealth and Empire. Because any nation or society is the epitome of the qualities of its individual members, the College has always been proud to add to its ranks, as Honorary Fellows, leading surgeons of other members of the British Commonwealth of Nations and of the world. Honorary Fellowship is awarded to few. It is the highest honour the College can give, and the College has been honoured by those who have accepted it and whose names now stand on its roll. Because of the importance of the occasion, Honorary Fellows are required by custom to attend in the Council Chamber to receive their diplomas at the hands of the President, and to sign the roll of Fellows. As a Member of the Council it has been my privilege to attend several of these presentations. I felt, as many have done, the spell of a ceremony that has changed its detail and its place but has retained the tradition and very much the form of the days when Columbus first landed on these shores. The Council have decided to depart from custom and present the diploma over-seas, rather than wait for that indeterminate event, the cessation of hostilities, in order to present it in the home of the College. In making this decision, I know they have been influenced by the wish to give contemporary rather than belated recognition to the spirit of harmonious co-operation that has existed between the surgeons of our countries before, and still more during, the war, and to the scientific discoveries that the bodies which those who are with us to-day represent have contributed to the common cause.

As a senior member of the Council, I have been entrusted by the President, Sir Alfred Webb-Johnson, with the great privilege and honour of welcoming these eminent surgeons to the ranks of our Honorary Fellows.

Nov. 8, 1943 ; in the British Embassy at Washington

ROBERT BAYLEY OSGOOD,—Your name is a household word wherever orthopaedic surgeons are gathered together, and wherever the games of football and tennis are played throughout the world. You are a Harvard student. Throughout your life you have been associated with the Medical School of that renowned University, and by your reputation and your writings have helped to carry its name to every part of the world. Your work has been recognized in Europe by Honorary Membership of five orthopaedic societies, and by your appointment to the Hugh Owen Thomas Lectureship at Liverpool in 1925. In the first world war you served over-seas in 1917 and 1918, and in the latter year you were selected as consultant to the office of the Surgeon-General in Washington. To-day you stand in the enviable position of being recognized as one of the greatest orthopaedic surgeons in the world, and as one of the leaders of medical education, particularly of orthopaedic education, in the United States.

EVARTS AMBROSE GRAHAM,—I will not offend your modesty or strain my own memory by attempting to enumerate the many distinctions that go to make up your very remarkable record. I know that you have seven degrees; that six medals have been awarded to you; and that you have been appointed to nine different lectureships. You edit the *Archives of Surgery*, and that unique volume the *Year Book of Surgery*, to which every surgeon in every land turns for guidance. You are Professor of Surgery in Washington University and Surgeon-in-Chief of Barnes Hospital in St. Louis. You have been President of the American College of Surgeons, of the American Surgical Association, and of the Association for Thoracic Surgery, and you are now Chairman of the Committee in Surgery of the National Research Council in Washington. You have, among much fine work, made two outstanding contributions to surgery—the introduction of a method of contrast radiography in the biliary tract, and the demonstration that cancer of the lung can be cured by operation. You had the first successful case of pneumonectomy for malignant disease, and if, as I believe, that patient is alive to-day, you have by far the longest surviving cure. But your reputation among your colleagues, who have bestowed on you the highest honours in their gift, rests on a surer and more enduring foundation than that of technical contributions. Throughout your life you have striven for surgical education and the raising of surgical standards, and the high position which American Surgery now holds is in large measure due to your efforts in this respect.

Oct. 30, 1943 ; in the Governor-General's House at Ottawa

NORMAN STRACHAN SHENSTONE,—Your name had been familiar to me long before I had the good fortune to meet you six years ago, and indeed it is familiar to every surgeon in Britain. You had your school and university education in Toronto, and you have well repaid the teaching you received, for you in your turn have been a teacher in its medical school for thirty-five years, and your reputation, and the students you have sent out, have helped to carry the fame of its University to every corner of the world. In the first world war you served over-seas in 1916 and 1917, and returned to act as Consultant in the Department of Pensions and National Health in 1918, an office you have held ever since. Outside Toronto you are known chiefly for your contributions to thoracic surgery—it would be more accurate to say as one of the founders of that branch of surgery, for it was your technical contributions that first established the operation of lobectomy as a safe and justifiable procedure. In Toronto itself you are known as one who has always placed the welfare of others above his own, who has published little but has preferred to let his views pervade the surgical teaching of his university, and who has worked for his juniors rather than asking them to work for him. I know that they and your colleagues will rejoice at the honour conferred upon you.

For reasons of paper economy the 29th annual report of the Board of Control is not being printed or put on public sale during the war. At the end of 1942 the total number of persons suffering from mental disorder notified as under care in England and Wales was 147,596 (63,531 men and 84,065 women), of whom nearly 87% were being treated in institutions provided by local authorities. This was a decrease of 3,516 during the year, compared with a decrease of 4,048 during 1941. The average annual decrease for the five years ended Dec. 31, 1942, was 1,952. This contrasts with an average annual increase of 1,691 during the last five years of peace. Discussing the effect of war conditions on the incidence of mental disorders, the report states that the number of new admissions to public mental hospitals showed an increase of 340 on the previous year. This was due to a rise of 944 in voluntary admissions, less a reduction of 149 in temporary admissions and 455 in admissions under certificate.

NEW YEAR HONOURS

The names of the following members of the medical profession were included in a New Year Honours List published in the *London Gazette* on Jan. 1:

Knighthood

Prof. FRANCIS RICHARD FRASER, M.D., F.R.C.P. Director-General, Emergency Medical Service.

WALTER HAWARD, O.B.E., M.B., B.S. Director-General of Medical Services, Ministry of Pensions.

Col. GEORGE WYKEHAM HERON, C.M.G., C.B.E., D.S.O., M.R.C.S., L.R.C.P. Colonial Medical Service, Director of Medical Services, Palestine.

THOMAS JONES, M.R.C.S., L.R.C.P., J.P. Chairman of the Anglesey Education Committee.

C.B. (Military Division)

Major-Gen. ALEXANDER GORDON BIGGAM, O.B.E., M.D., F.R.C.P., late R.A.M.C., Honorary Physician to the King.

CHARLES MAX PAGE, D.S.O., M.S., F.R.C.S. Lieut.-Col. (Acting Major-Gen.), R.A.M.C.

CHARLES PUTNAM SYMONDS, M.D., F.R.C.P. Acting Air Commodore, R.A.F.V.R.

C.I.E.

Col. THOMAS CRAWFORD BOYD, F.R.C.S.I., I.M.S. Inspector-General of Civil Hospitals, United Provinces.

Lieut.-Col. AUGUSTINE SARGOOD FRY, F.R.C.S.Ed., I.M.S. Professor of Operative Surgery, King Edward Medical College, Lahore.

Lieut.-Col. ARTHUR DENHAM WHITE, F.R.C.S., I.M.S. (ret.).

C.V.O.

FRANCIS HUGO TEALE, M.D., F.R.C.P.

C.B.E. (Military Division)

BASIL CEDRIC ASHTON, M.B., Ch.B. Col. (Temp. Brig.), I.M.S. Honorary Surgeon to the King.

LANCELOT MILLER CORBET, M.B., B.S. Acting Group Capt., R.A.F.O.

FREDERICK HARRIS, *M.C.*, M.B. Lieut.-Col. (Temp. Col.), R.A.M.C.

HENRY BRICE PARKER, D.S.C., M.B., B.S. Surg. Capt., R.N. (ret.).

C.B.E. (Civil Division)

CHARLES HERBERT BEST, M.D., D.Sc., F.R.S., F.R.C.S. Co-discoverer of insulin with the late Sir Frederick Banting of Toronto.

WILLIAM LESLIE BURGESS, M.D., F.R.C.P.Ed., D.P.H. Medical Officer of Health, Dundee.

GEORGE LISSANT COX, M.D. Chief Tuberculosis Officer, Lancashire County Council.

ALAN NIGEL DRURY, M.D., F.R.S. Lately Member of the Scientific Staff, Medical Research Council.

DUNCAN ARCHIBALD LAMONT GRAHAM, M.B., F.R.C.P. Dean, Department of Medicine, University of Toronto; former President, Royal College of Physicians and Surgeons of Canada.

Prof. SYDNEY ALFRED SMITH, M.D., F.R.C.P.Ed. Chairman of the Scottish Central Medical War Committee. For services to Civil Defence.

CLAUDE EDWARD TANGYE, M.D., D.P.H. County Medical Officer of Health, Wiltshire. For services to Civil Defence.

MAURICE LAWRENCE TRESTON, F.R.C.S., F.R.C.O.G. Col., I.M.S. Inspector-General of Civil Hospitals, Burma.

O.B.E. (Military Division)

GUY PASCOE CROWDEN, T.D., M.R.C.P. Lieut.-Col., R.A.M.C. T.A.

CECIL WOOD FLEMMING, D.M., M.Ch., F.R.C.S. Wing Cmdr. (now Acting Group Capt.), R.A.F.V.R.

ROBERT WILLIAM HIGGINS, M.B., B.Ch. Surg. Cmdr., R.N.

JOHN EDWARD GEORGE MCGIBBON, M.B., B.S. Squad. Ldr., A.A.F.

EDGAR ALEXANDER PASK, Acting Squad. Ldr., R.A.F.V.R.

JAMES MACLURE SMELLIE, M.D., F.R.C.P., Lieut.-Col., R.A.M.C., T.A.

PAUL ALFRED TURNER SNEATH, Lieut.-Col., R.C.A.M.C.

O.B.E. (Civil Division)

PETER PAUL DEBONO, M.D., F.R.C.S. Professor of Surgery, Malta University.

JOSEPH RICHARD GREGORY, M.D. Director, Kenya Branch, British Red Cross Society.

CHARLES MERRILL SCHAFFTER, M.B., F.R.C.S.Ed. Surgeon working in Church Missionary Hospitals in Persia.

HAROLD EDWARD SKEETE, M.D., C.M. For public services in Barbados.

LEONARD ANTHONY PAUL SLINGER, M.B., B.Ch. Colonial Medical Service, Resident Surgeon, Victoria Hospital, St. Lucia.

MARGARET WILKIE, LADY BHORE, M.B.E., M.B., Ch.B. Central India.

M.B.E. (Military Division)

CLARENCE MELVILLE BETHUNE, Major, R.C.A.M.C.

JOHN WEIGHTMAN BRIDGE, Major, R.C.A.M.C.

RICHARD JAMES CAIRNS, M.B., Ch.B. Capt., R.A.M.C.

ALFRED LEONARD CRADDOCK, M.B., B.S. Capt. (Temp. Major), Burma Army.

ERIC RUDOLPH HILL, Lieut. (Acting Capt), I.A.M.C.

THOMAS MILLER, V.D. Major, R.C.A.M.C.

FRANCIS LESLIE POTTER, Capt., R.A.M.C.

CHARLES MARTIN ROW, Capt. (Temp. Major), R.A.M.C.

M.B.E. (Civil Division)

RATNAKAR NARAYAN BHAINDARKAR, M.B., B.S. Divisional Warden, A.R.P., Dadar West Division, Bombay.

DAVID JAMES MASTERTON MACKENZIE, M.B., Ch.B. Acting Principal Medical Officer, Bechuanaland Protectorate.

MOHAMED ALI RANA, M.R.C.S., L.R.C.P. For public services in Kenya.

Kaisar-i-Hind Gold Medal

BASIL FRANKLIN EMINSON, M.B., B.S. Lieut.-Col., I.M.S. (ret.), Civil Surgeon, Karachi, Sind.

REGINALD ARTHUR HAYTHORNTHWAITE, B.M., B.Ch. Major, I.M.S., Civil Surgeon, Khasi and Jantia Hills, Assam.

JOHN LOWE, M.D. Co-ordinator of Research, School of Tropical Medicine, Calcutta.

JEAN MURRAY ORKNEY, M.B., Ch.B., D.P.H. Women's Medical Service, Director, Maternity and Child Welfare Bureau, Indian Red Cross Society.

Our readers will also learn with gratification of the knighthood to be conferred on Capt. G. S. Elliston, M.P., son of a former President of the B.M.A. and brother of the late Guy Elliston, Financial Secretary and Business Manager of the Association; and on Prof. J. C. Drummond, D.Sc., scientific adviser to the Ministry of Food.

Medico-Legal

DOCTOR ACQUITTED OF RAPE

At his second trial, which lasted four days and ended on Dec. 16, Dr. Krishna Morishwar Pardhy, F.R.C.S., a Brahmin aged 68, was acquitted of the rape of Mrs. Lucy May Pearson. At his first trial in July the jury failed to agree. According to the newspaper report[1] Mr. and Mrs. Pearson had known him for some years and had recommended relatives to him: he practised at Elvetham Road, Edgbaston, Birmingham, as a gynaecological surgeon. The case for the prosecution was that he was examining Mrs. Pearson in his consulting-room, and that her husband was waiting in the same room behind a screen. The report leaves so many gaps that it is difficult to form a picture of what the couple really alleged in evidence, but apparently their evidence was to the effect that the doctor made sexual connexion with Mrs. Pearson without her becoming aware of it for some little time; when she realized what he was doing she called to her husband, who came out, caught the doctor by the wrists, and called him a swine. The doctor at once stoutly denied misconduct, and in his evidence said he had practised in Birmingham for 35 years, had suffered from prostatitis for 12 years, and at the time of the incident was tired after performing six operations. As the couple were leaving the house, he said, Mr. Pearson drew some money from his pocket, jingled it, and said, "Mr. Pardhy, you are not a psychologist." Mrs. Pearson was described by her own doctor as a placid, sensible woman. After an absence of 45 minutes the jury found Dr. Pardhy not guilty. Medical men are always being advised not to examine a woman without the presence of a third person. This case shows that for safety the third person must be an assistant of the doctor.

[1] *Birmingham Post*, Dec. 15, 16, and 17, 1943.

O. C. Lord and M. J. Stewart (*J. Laryng. Otol.*, 1943, **58**, 263) who record a personal case, state that osteoclastoma of the temporal bone is a very rare disease, only two previous well-authenticated cases having been described. Their patient was a woman, aged 50, in whom the clinical duration of the disease was just over three years. The histological diagnosis was made two years before death by examination of a recurrent nasal polypus. Treatment by partial excision and radiation gave good results for a time. At necropsy the tumour was found to have extended to the base of the skull and had invaded the cerebellum.

Correspondence

Sciatica

SIR,—Sir Arthur Hurst's provocative essay on the treatment of sciatica (Dec. 18, p. 773) is both timely and chastening. I would suggest, however, that he has done scant justice to the part played by orthopaedic surgeons in the attempt to place the sciatica problem on a rational basis. It is many years since orthopaedic surgeons began to insist that sciatica is a symptom and not a disease; that true sciatic neuritis is rare; that sciatic pain is often referred pain (e.g., in osteo-arthritis of the hip); and that the causal lesion in a large group of cases is to be discovered in that complex system of articulations embraced by the lumbar spine and sacro-iliac joints. In common with physicians and neurologists, orthopaedic surgeons have also long been aware that many patients with backache and sciatica are the victims of a formidable psychological disturbance.

From the special standpoint of the orthopaedic surgeon the conventional diagnoses of lumbago and sciatic neuritis were first challenged nearly forty years ago by the Boston Orthopaedic School (Goldthwait and Osgood[1]). From this emerged the concept of sacro-iliac "strain" and lumbo-sacral "strain" as clinical and pathological entities to be treated by rest, fixation, forced mobilization, or in the last resort by operative fusion, in accordance with the special circumstances of the individual case, and not in accordance with the tenets of rival schools of orthopaedic practice. As time went on there were many successes, but far too many failures. In consequence orthopaedic surgeons began to look for a more satisfying explanation of the backache-sciatica symptom complex. During this period attention was directed to two contributory aetiological factors—abnormal posture and anatomical variations at the lumbo-sacral junction. We now attach little significance to the role of such anatomical variations as unilateral sacralization, but abnormal posture is a factor to be reckoned with in any re-educational programme for the treatment of backache and sciatica.

The next phase witnessed the intervention of the Italian school of orthopaedics when Vittorio Putti (1927) of Bologna, developing the notion of Sicard, first put forward the view[2] that sciatic pain—and more especially that striking clinical picture, sciatic scoliosis—was a symptom of arthritis of the interarticular joints of the lumbar spine. For the treatment of this condition Putti used the conservative measures of heat, rest, and fixation in plaster, but in intractable cases practised the operation of removal of the diseased articular facets—a procedure designed to decompress the irritated nerve roots lying in the intervertebral foramina. Sir Arthur Hurst has apparently overlooked the fact that the "vertebral arthritis theory" is thus at least sixteen years old, and that Mr. Blundell Bankart, who at the present time is almost alone in his unqualified support of this theory, has never claimed it as his own creation. Like sacro-iliac and lumbo-sacral strain, vertebral arthritis as a common cause of sciatica has in turn had its day. No one would deny the existence of these particular lesions, but we are compelled to believe that they form a minority group.

And now at long last a more concrete lesion of the lumbar spine has come to light—the disk protrusion. This lesion is a manifestation of a disturbance of the mechanics of the lumbar spine comparable in some respects to internal derangement of the knee-joint, and thus generically an "orthopaedic" lesion which may not necessarily require operative treatment, as pointed out by C. P. Symonds.[3]

In the comparatively short space of time which has elapsed since the pioneer joint contribution of Mixter, a neurological surgeon, and Barr, an orthopaedic surgeon, neurosurgeons in America and Great Britain have already reaped a rich harvest of cures by removal of the projecting disk fragment in cases selected from the large numbers of sciatica patients who continue to find their way to orthopaedic surgeons. In the majority of orthopaedic clinics to-day patients with backache and sciatica are carefully studied by surgeons fully aware of the manifold causes of these symptoms. Heaven is thus often exceedingly helpful to the victims of sciatica, despite Sir Arthur Hurst's quotation from an unknown writer which prefaces his essay! I am accustomed to teach my students that the sciatica patient falls into one of five main clinical groups, and that each group should be considered in turn in the process of elimination which leads to diagnosis: (1) pelvic *visceral* disease; (2) *bony* lesions of the lumbar spine, pelvis, and femora—i.e., lesions essentially destructive in type (inflammatory or new growth); (3) *joint* lesions of the spine, pelvis, and hips (in this group the prolapsed disk has displaced the sacro-iliac strain and vertebral arthritis as the pivotal lesion); (4) central nervous lesions—e.g., cauda equina tumours; (5) pseudo-sciatica—fibrositis of the fascial, ligamentous, and muscle masses in the lumbar region, buttocks, and thighs.

In the *Army Medical Department Bulletin*[4] the fibrositic group is regarded as numerically important. This at the present time seems to be the outstanding controversial issue in the problem of the causation of sciatica.—I am, etc.,

Manchester. HARRY PLATT.

SIR,—I was particularly interested in Sir Arthur Hurst's essay on sciatica, because my own comparatively limited experience of the complaint had led me to a somewhat similar view. Some time ago I had to deal with about half a dozen more or less intractable cases of sciatica all of which had experienced some unusually severe emotional strain shortly before the onset of pain. Typical of these was a university professor who, coincident with his retirement, lost a dearly loved wife. Then, while convalescing in a nursing-home, he had contracted sciatica just as he was beginning to feel he could face life without its old associations. I regret to say that at the time he told me his story my knowledge of sciatica had not been "debunked," so that I missed the obvious clue to its cause and submitted him to one useless "orthodoxy" after another. However, the coincidence of these cases served to draw my attention not only to the possibility of a psychic origin but also to the probable way this produced the common effect.

There seemed to be no reason to quarrel with accepted causes of sciatica, which might well be present in many people with or without the complaint. Certainly one would not omit thorough external and rectal search for these. But whatever such examinations might disclose it appeared that the actual onset of pain was more likely to be determined by some factor that increased the patient's perception of it than by any real event of a purely organic variety. In my cases I was accordingly led to suppose that pain arose when there existed an urgent need for escape from some unbearable memory under circumstances that provided insufficient distraction of a less morbid kind. (Presumably this incompatible "memory" need not be of recent origin or as well known to either patient or doctor as it happened to be in my cases.) Then as soon as consciousness is fully focused upon the sciatic pain it is in turn greatly intensified by all the muscular and postural adjustments by which the body vainly endeavours to seek relief. Such an aetiology and sequence of events is well recognized in relation to pains in all parts of the body, but, as Sir Arthur Hurst points out, sciatica must frequently belong to this category, judging by the variety of causes and treatments assigned to it.

I would like to extend Sir Arthur Hurst's observations on treatment a little further than his recommendation for some form of suggestion. The premisses on which this is based seem to call for attempts to eradicate the malady as well as the pain by defining its nature and cause to the patient. For instance, one of the cases to which I have referred was a man of about 50 who had done little or no work since the last war due to injuries sustained and the fact that it had left him a nervous wreck. This man suffered severely for nearly a year from sciatica that would not yield to tablets, medicine, injections, physiotherapy, or anything else. The masseuse obtained a little relief for a time mainly by postural correction and relaxation of dorsal muscular spasm, but really nothing seemed to be much use however confidently it was presented to the patient. Now shortly before the onset of the pain the patient's father had died in an infirmary, and I found that he was

1 *Boston med. surg. J.*, 1905, No. 21-22.
2 *Lancet*, July 9, 1927. (Also *Lumboartrite e sciatica vertebrale*, Bologna, 1936.)
3 Sciatica, *Medical Annual*, 1943.
4 *Army Medical Department Bulletin*, No. 16 (Oct. 1942).

haunted by a conviction that he had been instrumental in his father's death. A complete explosion of this fallacy, together with detailed explanation of how he had been seeking refuge in pain, was followed by its disappearance in the course of a couple of weeks.

However, quite apart from one's own personal experience, it seems to me that if one accepts Sir Arthur Hurst's very convincing arguments in favour of a functional interpretation of sciatic pain it is no less incumbent on one to find and eradicate the cause than if one believed this to be of an organic nature. If simple suggestions of cure succeed in overcoming the pain one can hardly feel confident that one has done any more than suppress a symptom, however gratifying that may be. In dealing with pain arising from a possibly progressive organic disease such complacency would generally be regarded as quite unscrupulous. In that case attempts of any sort solely directed towards relief of pain would be regarded as nothing short of quackery unless the case had been proved to be hopeless. Yet if in the absence of organic disease a case yields to suggestion one seems to be exonerated from knowing or doing anything more about it until the almost inevitable recurrence of identical or other symptoms of the disorder.—I am, etc.,

Eye, Suffolk. J. SHACKLETON BAILEY.

SIR,—Discussion on the treatment of a symptom common to many disorders is seldom illuminating. There would be no more difficulty in making fun of the treatment of headache than Sir Arthur Hurst finds in ridiculing the treatment of sciatica. The relief of headache may demand operations, drugs, rest, exercises, or psychotherapy; no one would discern anything unreasonable in that.

Nowadays sciatica is largely employed as a synonym for pain felt to radiate down the back of the lower limb from above. A medical definition consonant with this usage would be "pain common to various deep-seated lesions placed at the proximal extent of the fourth lumbar to second sacral segments." The alternative nomenclature is to regard sciatica as a diagnosis and confine its use to cases showing signs of diminished conduction along the sciatic nerve. This usage cannot be recommended, since it results in several inconsistencies—namely, that in about half of all cases of sciatic periradiculitis no signs of a parenchymatous lesion ever appear; that two entirely distinct conditions (sciatic neuritis and sciatic periradiculitis) go by the same name; that cases of pure backache caused by sciatic periradiculitis have to be called sciatica. The nomenclature that commends itself to me is: (*a*) sciatica—the name of a pain; (*b*) sciatic periradiculitis (which should be divided into frictional and non-frictional)—affections primarily of the sheath of the sciatic nerve-roots; (*c*) sciatic neuritis—primary affections of the parenchyma of the sciatic nerve.

The rational treatment of sciatica is that of the causative lesion. It differs in no way whether merely local or much referred pain is present. A list of the commoner lesions setting up unilateral sciatica and their appropriate treatment follows:

Deep lumbar fasciitis: deep massage; if this fails, division of the affected part of the fascia.
Gluteal myositis: deep massage.
Gluteal fasciitis: deep massage.
Sacro-iliac strain: corsetry, preceded if necessary by manipulative reposition of the joint.
Sacro-iliac arthritis: local deep *x*-ray therapy.
Non-frictional sciatic periradiculitis: epidural local anaesthesia.
Frictional sciatic periradiculitis: manipulative reduction of the displaced fragment of intervertebral disk; if this fails, immobilization; if this fails and the symptoms warrant, operative removal of the protruded disk.
Intermittent compression of the fifth lumbar nerve-root: rest; if this fails, consideration of Bankart's decompression of the root by removal of the lateral articulation.
Sciatic neuritis: removal of the cause when it can be found—e.g., poisoning with a heavy metal or alcohols. Many cannot be eliminated—e.g., secondary deposits.
Functional pain: psychotherapy.

There are many pains which give rise to very little by way of physical signs; sciatica is one of them. None the less, the pain of sciatica is very real. The examination of the patient is difficult and tedious. It must disclose whether he is suffering from (*a*) a nervous lesion and, if so, which sort; (*b*) a muscular, fascial, or ligamentous lesion, and, if so, exactly where; (*c*) nothing organic. Only on the basis of an accurate diagnosis can effective treatment be offered for this common symptom.—I am, etc.,

London, W.1. JAMES CYRIAX.

Operation for Prolapsed Intervertebral Disk

SIR,—I am quoted by Sir Arthur Hurst in your issue of Dec. 18 as convinced that in Service patients the operation for prolapsed intervertebral disk has proved unsuccessful in getting men back to duty. This was the opinion which I expressed in a discussion at the Royal Society of Medicine two years ago. Since that time, as the result, I believe, of better selection of cases, improved surgical technique, and a more carefully planned convalescence, the results of operation have been much better than they were during the period from which my earlier experience was drawn. It is to be hoped that surgeons who have followed up their cases will soon be able to give us details of the percentage of patients able to return to, and remain at, full duty after operation. We need also a follow-up of a comparable series treated by immobilization before we can improve our judgment as to the circumstances in which operation is desirable. In certain cases I believe it offers the best chance of return to duty.—I am, etc.,

Oxford. C. P. SYMONDS.

Tuberculosis in Belgium

SIR,—In your issue of Dec. 18 (p. 800) you give an account of the question put by Mr. Oldfield to Mr. Dingle Foot in the House of Commons on Dec. 7 with regard to the increase in the number of registered cases of tuberculosis in Belgium. The number has risen from 69,079 in Dec., 1941, to 109,511 in Feb., 1943—that is to say, from 8.3 per 1,000 of the population to 13.3. While accepting the latter figure, Mr. Foot remarked that slight cases were included, because "anyone might apply to his doctor for a certificate showing that he was suffering from tuberculosis."

According to the evidence which has reached me from Belgium since 1942, and which has recently been confirmed by Belgian doctors who have succeeded in escaping from Belgium, the registration which entitles a patient to a supplementary ration is extremely difficult to obtain and is not granted merely on the production of a doctor's certificate. Either an *x*-ray photograph showing internal lesions must be added or conclusive sputum specimens. In a case of tuberculosis of the eye the doctor was unable to obtain a supplementary ration card for his patient because neither a photograph nor the sputum would be evidence.

The estimate of one-third of the children under 18 suffering from tuberculosis and other diseases is quoted in a report issued in May, 1943, by the American Board of Economic Warfare. It is based on information emanating from Sweden. It is not the first time that Swedish and Swiss observers have confirmed reports received by the Belgian Red Cross in London.—I am, etc.,

Radlett. EM. CAMMAERTS.

Treatment of Obstetric Shock

SIR,—I was most interested in Dr. I. S. Fox's contribution (Dec. 18, p. 781) on the value of immediate blood transfusion in primary obstetric shock.

He describes in detail a case following a short normal uncomplicated delivery, which responded very satisfactorily. If I may be allowed one point of criticism, however—expression of placenta by Credé's or any other method should not be attempted so quickly after delivery. Another point—I doubt whether the condition is as rare as he suggests, as I have had two similar cases in a short series of approximately 300 deliveries.

Both patients were primiparae with normal histories and pregnancies, who delivered spontaneously after short and easy labours, one in fact being B.B.A. Shortly after delivery, with normal blood loss and before any attempt was made to express the placenta, both cases collapsed with obvious and severe obstetric shock. The usual domestic antishock measures were instituted immediately without much response, except that in

one case intracardiac adrenaline was successful in restoring cardiac rhythm. Pituitary had not been used in either case. An urgent summons for the local "flying squad" was answered quickly, and transfusion of whole blood was most successful.

I agree whole-heartedly with Dr. Fox as to the value of the "flying squad" in these and similar cases, and would urge that each large centre of population should have the benefit of this service, as such cases are not fit for removal to hospital.—I am, etc.,

Newcastle-upon-Tyne. IRVING STOLL.

Immediate Blood Transfusion in Obstetric Shock

SIR,—I was very interested in the article by Dr. I. S. Fox under the above title (Dec. 18, p. 781). Several similar cases have occurred in this hospital where there was severe shock with a blood pressure of 70/50 mm. Hg in association with little blood loss and a retained placenta. Immediate transfusion with plasma and whole blood in one case completely failed to relieve the condition. It was then decided to remove the placenta manually under gas-and-oxygen anaesthesia, and within 10 minutes of the removal the pulse had improved greatly and within 20 minutes the blood pressure had risen to 110/60 mm. Hg. In all cases of obstetric shock in the presence of a retained placenta with little blood loss prompt manual removal of the placenta has improved the condition immediately without a transfusion.

The exciting cause of the shock appears to be a histamine release from the partially separated placenta and absorption into the maternal circulation, and removal of the placenta cures the condition. In the reported case, shock might also have been due to injudicious use of Credé's method, which in itself is capable of producing shock. The rationale of whole-blood transfusion is difficult to understand, and plasma or serum in any case ought to be sufficient to combat shock in the absence of bleeding. It appears to be rather a waste of whole blood, which should be reserved for cases requiring haemoglobin because of severe anaemia either present before delivery or due to bleeding.—I am, etc.,

Norfolk and Norwich Hospital. W. P. HIRSCH.

SIR,—I read with interest the article by Dr. I. S. Fox on immediate blood transfusion in obstetric shock as I had an almost identical experience earlier in the week.

Mrs. X., 2-para aged 32, started in labour about 10 p.m. on Dec. 13, 1943. I was sent for at 1 a.m. on the 14th and delivered her of a baby weighing 9½ lb. at 2.10 a.m. She had terminal chloroform anaesthesia when the head was on the perineum, and the labour otherwise was quite natural, no instruments being used. There was no laceration of the perineum, and bleeding was minimal. At 2.30 a.m. I attempted gently to express the placenta by Credé's method, but was unsuccessful, so desisted and sat down to wait. Five minutes later the patient fainted. There was no further bleeding and the uterus was quite firm. The foot of the bed was raised, hot-water bottles applied, coramine injected. She came round, but kept threatening to faint. At about 3 a.m. I expressed the placenta, and the patient said she felt all right. There was very little further bleeding. I gave her 0.5 c.cm. of pituitrin at 3.15 a.m., and as she seemed quite settled with a pulse of good volume and about 80 per minute I left her about 20 minutes later. However, within half an hour I was recalled by 'phone as the nurse said she had "gone off" again.

On my return the nurse was already giving rectal saline, but the pulse was very faint, the patient's colour greyish, and the pupils widely dilated. I called out the local "flying squad," but when it arrived the patient's condition was better, though she still tended to faint. The obstetric specialist decided, as it was obstetric shock and not due to haemorrhage, to give a pint of plasma, and after two or three complaints by the patient of feeling sick and faint during its administration the pulse improved and she felt much better, and she had no further trouble.

I also was at a loss to ascribe a cause for the condition, and it was my first experience of it in 20 years' practice. Her uterine contractions had been good, it was a gentle labour, and there was little loss of blood. I thought it had something to do with the retention of the placenta, but I also felt that there was some psychological factor, as her husband was away in the R.A.F., her other child, aged 2 years, was ill with a cold, she was alone in the house with this sick child for 2 days (the day before and the day—the 12th—on which the confinement was expected), and her neighbours on each side of her house were all suffering from influenza, so that she had been very anxious as to how she was to get in touch with the municipal midwife. Fortunately, on the 13th her stepmother, who was to have looked after her, was sufficiently recovered to come.—I am, etc.,

A. BARLOW.

Detection of Death under Anaesthesia

SIR,—In Mr. Harold Dodd's article on blood-pressure readings in general surgery (Dec. 25, p. 811) I note that he conforms to modern surgical procedure by having blood-pressure readings taken before, during, and after operations, as has been done at most good hospitals, I believe, for many years, and certainly at my own. I am a little disturbed, however, to read of his experiences when operations are done without blood-pressure observations, for he records that on three occasions death on the table was first detected by the surgeon. I recommend, with considerable confidence, the rule that a surgeon should only employ an anaesthetist who is at least as nimble as he is at detecting the onset of an acute attack or "mors" without the aid of a blood-pressure cuff.—I am, etc.,

London, W.1. JOHN HOSFORD.

Heroin during Labour

SIR,—I was interested to read in your issue of Dec. 18 (p. 795) that Dr. W. Edwards had found trilene so efficient in producing analgesia in obstetrics. It has to be borne in mind, however, that, since trilene has only recently been introduced as an anaesthetic agent, our knowledge of its toxic effects may not yet be complete. Three cases of permanent trigeminal paralysis following the use of trilene were described only last month in the *Journal* (Dec. 4, p. 713).

During the past five months every case admitted to this hospital has been given heroin during labour, and I have come to the conclusion that this is the most generally useful drug in normal labour. When the cervix is 2 to 3 fingers dilated 1/6 gr. heroin is injected, and this is followed by 1/12 gr. heroin when the cervix is almost fully dilated and only the anterior lip remains to be taken up. This is the minimum amount which is given. In a long first stage additional doses of 1/12 gr. heroin are given. If it is found that the cervix is almost fully dilated or that the second stage has begun when the case is admitted, 1/6 gr. heroin is given straight away, no account being taken of when delivery is expected to take place.

With this technique, which has been employed now in over 200 cases, the pains of both the first and second stages are adequately relieved, and in the vast majority of cases no supplementary anaesthetic is required at all. After the first dose of heroin the patient either sleeps for a while or enters into a pleasant doze. The importance of relaxation, as expounded by Dr. Grantly Dick Read, is not overlooked, and every patient is taught and encouraged to lie relaxed and still during the first-stage uterine contractions. Bearing-down efforts in the second stage are not impeded in the slightest. The mother does not cry out pitifully for relief when the head is on the perineum. There is no moaning, no groaning. The child cries spontaneously when it is born. I have on many occasions given 1/6 gr. heroin to women admitted in the second stage of labour. Delivery has taken place at all times from ten minutes to two hours later, and in not one of these cases did the child fail to cry lustily and spontaneously.

Not only is the normal course of labour not interfered with, but the method is pleasant, as heroin produces a euphoria unrivalled by any other narcotic drug, and the disagreeable features of inhalation anaesthesia are avoided. Patients can be left alone after being given heroin, a factor which makes the method ideal for domiciliary midwifery. In my opinion the heroin technique, as outlined above, could be safely entrusted to midwives.—I am, etc.,

JAMES ROSS,
Emergency Maternity Hospital, Ilkley. Resident Obstetrician.

Industrial Lead Poisoning

SIR,—I was most interested and gratified by Dr. Lane's letter (Dec. 11, p. 760). I had been rather shaken by the comments in the leading article on industrial plumbism referred to by Dr. Lane, inasmuch as I have proved to my own satisfaction the value of regular and periodic punctate basophilic counts in the lead works with which I have been associated as appointed surgeon for the past two years. Ninety-five per cent. of the employees—of whom there are about 600—submit willingly to the taking of their blood, and each man working where the hazard is known to be particularly great has his blood examined every 3 to 4 weeks. The result of the count determines the advisability or otherwise of the transference of the man to a part of the works where the risk is less. Again, blood counts for punctate basophilia are of the utmost value to the management, for if it is discovered that a batch of workmen on one particular process suddenly develop a markedly raised count the conclusion is obvious—the ventilation at that process is at fault, and this must be rectified.

I maintain that with the co-operation of the management the lead-works doctor is in a position to reduce industrial plumbism in such works to a minimum. I might add that in the works alluded to in this letter there has not been a single case of plumbism in 18 months. The blood cells are counted with the aid of dark-ground illumination; the granules are so much easier to define than when the direct method is used, and consequently much time and eyestrain are saved.—I am, etc.,

Newcastle-upon-Tyne. H. C. WRIGHT.

Shock Treatment of Mental Disorder

SIR,—Having been privileged to be a co-introducer of electrical convulsion treatment to this country in 1939, it happens also that I am a practising psychotherapist upon limited but intensive Freudian analytical lines; I therefore claim a measure of impartiality in venturing to reply to Dr. Winnicott's observations upon this twofold topic (Dec. 25, p. 829).

I fear there is a basis of truth, which should not, however, be exaggerated, in your correspondent's contention that the even course of medical evolution has been interrupted and set back by the widespread application of convulsion therapy. Should this be the case it is a regrettable, though perhaps to some extent inevitable, sequence of events largely owing to the inherent difficulties associated with psycho-analytical practice, particularly where time and money are concerned. Among psychiatrists generally there has been and still exists a failure to grasp and appreciate the great importance and fundamental significance of that arduous and prolonged psycho-analytical approach, confronted as it is by the imperative necessity of the analyst himself undergoing analysis. To me it becomes increasingly clear that convulsion therapy, when indeed not self-sufficient, should be regarded as an adjuvant means of promoting accessibility to later psycho-analytical investigation and treatment.

Regarding the alleged harmfulness of convulsion therapy—a view nowadays quite unusual—I would say that over four years of clinical experience, including the completion of over 8,000 major inductions with only two minor fractures and no untoward sequelae, has convinced me of its very wide margin of safety. To protest against convulsion therapy upon ethical grounds in the face of such findings, and when such treatment *per se* so commonly results in speedy and sometimes lasting improvement, suggests an emotional bias on the part of your correspondent, whose main thesis I am, nevertheless, ready to support. Because it is founded upon strict laws of evidence, sooner or later the essential soundness of psycho-analysis will surely prevail, both against inherent difficulties and also the vast wall of ignorance and prejudice which hinders its acceptance. Practicability and ease of administration, together with the likely promise of speedy results, have ensured the success of convulsion therapy; but psycho-analysis is much more than a therapy: it is nothing less than a science in the making. Its methods, necessarily slow and laborious, are unspectacular, but they offer in return knowledge and understanding of the mind, also therapeutic possibilities where all else fails.

It is indeed unfortunate from the standpoint of science that the value of the analytical approach and convulsion therapy varies inversely with their practicability. In the ready practicability of convulsion therapy lies its immediate advantage, but also a certain kind of danger; this latter, however, is not a physical danger to the subject but one of therapeutic superficiality by the operator, who is tempted to be satisfied with perhaps mere palliation and to disregard that proper investigation and furtherance of understanding which alone are worthy of the name of science.

In questions of therapy, however, there is a need to be practical as well as idealistic, and to remember that the one essential characteristic of a successful therapy is its power to ameliorate the condition of the patient. There is no room for exclusiveness where multiform successful treatments are concerned; the determining factor in the choice of any particular treatment will always lie in the practicability of its application. It behoves us nevertheless to place first things first, and to maintain a proper perspective and a sense of relative values. As regards these two approaches to treatment, there surely can be no room for doubt as to their greatly differing significance and value to the scientist. The priority of importance of the psycho-analytical approach, save as a clinical method of ready and widespread applicability, is altogether overwhelming.—I am, etc.,

Warlingham Park Hospital. WM. H. SHEPLEY.

SIR,—I have read with amazement Dr. Winnicott's remarkable letter dealing with the above subject. Although the *modus operandi* of this form of treatment is still in doubt there is surely no excuse for describing it as "a mediaeval attempt to drive out evil spirits." The author is apparently under the impression that fear is the operative factor. In the cardiazol method of inducing convulsions there was a reasonable doubt as to the part played by fear, but in electrically induced convulsions fear does not or should not exist. If the patient is afraid, it is because of some ill-advised description of the treatment, such as appeared in the lay press and was most justifiably criticized by Dr. T. M. Cuthbert. There is surely no question of "inflicting pain" on the patient, considering the fact that most patients after an induced convulsion will firmly maintain that they have received no treatment and will confabulate in a remarkable manner in order to explain away their period of amnesia. The following description of the treatment by an intelligent patient is typical. In several letters to friends he stated: "This new electric treatment is marvellous. They connect headphones to your head and you go off to sleep for half an hour. On awakening, you feel very fit."

Dr. Winnicott refers to this form of treatment as if it were still in the experimental stage. The fact that it has raised the recovery rate in the depressive psychoses by over 60% should provide sufficient evidence of its efficacy. Indeed, it is generally agreed among psychiatrists that it is almost specific in this form of mental illness. Are we therefore being asked to abandon it merely because it is alleged to be empirical? Is not the statement about "ethical implications" rather suggestive of the literature published by the various antivivisection societies? If it is rational for the profession to oppose such literature strongly, it should also be rational for it to oppose a similar type of propaganda, even when this is initiated by one of its own members.—I am, etc.,

W. LIDDELL MILLIGAN.

City Mental Hospital, Newcastle-upon-Tyne.

SIR,—Dr. D. W. Winnicott (Dec. 25, p. 829) raises an important set of problems. My reaction to them from experience in several hospitals is as follows:

(1) I had always had a lingering fear lest the electrocution chair might be an agonizing prelude to death. After giving a large number of shock treatments my mind is at rest. Complete unconsciousness is instantaneous.

(2) I have found no experienced teachers in any mental hospital. The rationale is not taught and is probably not understood by those who teach the technique. A new man is taught how the machine works, and with the usual warning about weak hearts and full stomachs he is left to get on with the treatment.

(3) At present I know of no body of statistics which have been compiled as to such things as influence on temperature, effect on pupil reaction, mnemonic measurements resulting immediately, and for 24 hours or more, after treatment.

(4) So far as I know there are no records of any observations which have been made over a long series of cases, by which one can learn how to make a diagnosis as to the suitability of any case for treatment, and of the reason why a certain percentage of selected cases improve temporarily, others improve over longer periods, and others show no sign of progress.

(5) The treatment has been so vulgarized by the Press that certain private mental hospitals advertise their use of this treatment as a method of attracting patients. Friends and relatives are beginning to think all is not being done for the patient if shock treatment is not being tried.

(6) In my opinion a start should be made in every hospital where shock treatment is used to build up "a science of shock treatment" by appointing a man with sufficient time and talent to study the whole relationship between patients and the treatment as to the suitability, the reaction, the volume, the length of time, and the post-treatment results which may follow for at least twelve months after a course has been given.

—I am, etc.,

London, W.1. JOSIAH OLDFIELD.

SIR,—I am afraid I cannot see eye to eye with Dr. D. W. Winnicott's plea for a discussion of the ethical implications of the shock treatment in psychiatry (Dec. 25, p. 829), as it seems to me that there does not exist such a problem if the treatment is administered—as it always ought to be—by the experienced mental specialist only. Any practitioner experienced in the treatment and the psychopathology of mental disorders appreciates the drawbacks of this method, and knows that one cannot cure schizophrenia or even involutional melancholia by merely turning a switch or injecting a chemical compound into the veins. He knows that this is only part of a treatment which must be supported by purely psychological methods such as persuasion, psycho-analysis, and suggestion. He is horrified at the thought that anybody but an experienced mental specialist may feel entitled to try out this method of treatment, which is just as dangerous in the hands of the inexperienced as radium or an anaesthetic in untrained hands.

Although some patients are frightened or feel some vague discomfort during the treatment, no patient is conscious of being hurt by it, and there is not the least suggestion of a suicidal impulse on his part. Neither have any of my colleagues, who have administered hundreds of shock treatments, ever been aware of intending consciously or subconsciously to hurt the patient, and I am convinced that even the most thorough psycho-analysis of all mental specialists administering this treatment would fail to detect any sadistic complexes.

As I have pointed out in a previous letter (Oct. 24, 1942, p. 496), the indications for shock treatment are limited, and the aim of the treatment—cure or relief only—must be kept in mind when selecting the cases. It is surely no panacea and dangerous in the hands of the inexperienced. The conscientious expert, however, need have no troubled conscience as to the ethical justification so long as he keeps in mind that the essence of all mental treatment is psychological. The tremendous success of the electrical convulsion apparatus even in the lay press is undoubtedly due to the old magic of electricity, with its switchboards, wires, and red lights, which acts even in these enlightened times like a potent psychological factor or even with greater charm and power than the injection in a vein and the manipulations of nurses and physician during shock treatment.—I am, etc.,

K. A. GRAF,
Assistant Medical Officer, Monmouthshire Mental Hospital.

Duodenitis

SIR,—Dr. Wroth's letter of Nov. 27 about duodenitis raises several points of great interest to radiologists.

He asks for a definition of duodenitis. Surely, duodenitis means inflammation of the duodenum, chiefly of the mucosal coat. The inflammatory changes in the mucosa are described by pathologists who have studied suitably prepared specimens.

The indirect signs of such changes are unreliable, and the radiologist should apply himself to the demonstration of the condition of the mucous membrane of the duodenum. He may report that his interpretation of the appearances is that the mucosa is normal, that there is an ulcer niche or other abnormality present, or that the rugae are coarsened in calibre, irregular in pattern, and stiffened in consistency. Until the latter appearances can be shown to be due to some other condition they must be considered as due to inflammatory changes—i.e., duodenitis.

The fluoroscopic examination permits the study of the movements of a given part, but with modern technique a report on the anatomical conditions is not to be permitted. What is seen on the screen can be and must be recorded on the film. If it is not, the radiologist may, without shame, report that for one technical reason or another he has failed to demonstrate the condition of the mucosa. He must not mislead the clinician by casting a radiological horoscope and interpreting indirect signs as indicating an organic lesion. Rapid emptying of the stomach, spasm of the pyloric antrum, irregular and fleeting filling and inconstant contour of the duodenal cap, are signs of a disturbance of gastro-duodenal motility: they may mask an organic lesion. If the observer cannot find the latter, he is not entitled to infer its presence from the former. This is not the time or place to enter into the differential diagnosis or into technique in any greater detail. Duodenitis, as gastritis, seems to be a definite and defined condition. The frequent diagnosis of such a condition on insufficient evidence brings radiological methods into disrepute.
—I am, etc.,

London, W.1. G. T. CALTHROP.

SIR,—I am in agreement with Dr. Norman Henderson's remarks (Dec. 25, p. 828) concerning cases in which the outstanding features are spasm of the pylorus and duodenum. I have found that the great bulk of these cases are due to duodenal ulcer. I have no doubt that there is such a condition as "duodenitis," and typical features of this condition with pathological verification have been described by Dr. B. R. Kirklin. I myself have never actually met with one of these cases, but I should imagine that they are similar to the cases of chronic duodenitis mentioned by Dr. Henderson.

There is one point upon which I should like to comment, and that is in relation to the ulcer crater. Dr. Henderson says that only a small percentage of duodenal ulcers present a demonstrable crater on *x*-ray examination, and that the large proportion of those showing craters have a history of long standing. This statement of his, perhaps, needs some modification. Akerlund in his series of cases found a crater in 60% and Berg in 50%. Geyman in America found it in 40% in his first series, and in a later series 60% of all cases. In an investigation of cases at Manchester Royal Infirmary I found it in 42% of all cases diagnosed as duodenal ulcer. These figures are rather higher than a "small percentage." Apart from this, in 117 cases showing a crater 11 had no deformity of the cap or irritability and 37 showed only a slight degree of deformity. In fact, a crater was shown in 48 out of 90 cases having slight or no deformity (i.e., 53%), and in only 12 out of 47 cases with severe deformity (i.e., 25%). This shows that the crater is more often found in earlier cases than in those with a long history, as these 90 cases all had histories under five years. Certainly, no radiologist would wait until he found a crater before diagnosing a duodenal ulcer: but it is, when found, a very valuable sign, more so in early cases, and may be the only sign of an ulcer. It is therefore in early cases that it should be particularly searched for.—I am, etc.,

Wrexham. STANLEY NOWELL.

X Rays and the Clinical Society of London

SIR,—In reply to Sir Arthur Hurst's letter (Dec. 18, p. 795), my authority for the statement that the most interesting event in the history of the Clinical Society of London was the first medical description of *x* rays in this country was Sir William Hale-White, who was honorary secretary of the Society in 1893–6, and in a letter to the *Lancet* (1930, 2) said that "we owe to Prof. Thompson the first medical demonstration of *x* rays in this country." My attention had been drawn to this letter by a note in Lady Burdon Sanderson's memoir of her husband (1911, p. 73), who, besides many other distinctions, was the first honorary secretary of the Clinical Society.—I am, etc.,

Kensington, W.8. J. D. ROLLESTON.

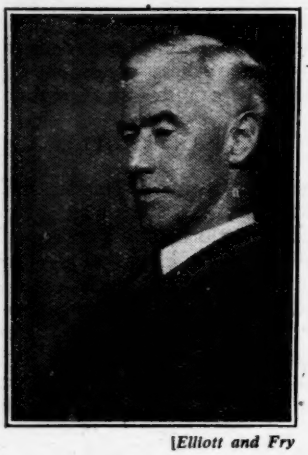
Obituary

GEORGE CRANSTON ANDERSON, C.B.E., M.D., LL.D., F.R.C.P.

Secretary, British Medical Association

We announce with sorrow that George Anderson, our dear friend and honoured colleague, has died in hospital ten weeks after the severe heart attack which overtook him on Oct. 23.

From the time it was founded by Sir Charles Hastings (who was its first General Secretary as well as its first Chairman of Council) the British Medical Association has been fortunate above all things in its leaders. This remark applies not only to the long list of men who have occupied its principal chairs or sat at its treasury but to the shorter succession of its chiefs of staff. No three men could have been more diverse in gifts, outlook, and temperament than the three who have borne the title of "Medical Secretary"—Sir James Smith Whitaker, Dr. Alfred Cox, and Dr. G. C. Anderson—yet each of them during his term of office and in the situation which he had to face came to be accepted as the embodiment of the B.M.A. In each case the name of the Association and of its chief executive official were for the time being interchangeable terms.



[*Elliott and Fry*

When Alfred Cox retired from the Medical Secretaryship in 1932 there were many who felt that, efficient and popular as his successor would assuredly be, he could never fill the place occupied by Cox. The man who had been Cox's trusted deputy for thirteen years certainly presented a complete contrast in appearance and manner to his old colleague. But he found his way into the confidence and affection of the rank and file as assuredly as did his predecessor. The good B.M.A. executive officer is not fashioned from a single mould.

The career of George Cranston Anderson was so closely bound up with the Association from the time of joining its headquarters staff when he was not yet forty that one was inclined to forget that he had already ten years in general practice, followed by three years on active war service in Egypt and Palestine. He was born on Nov. 14, 1879, the only son of a Scottish minister, the Rev. K. C. Anderson, D.D. The father was a native of Jedburgh, who early in life held several pastorates of Congregational churches in the United States, and came back to this country to the charge of a church at Bradford, and eventually to one at Dundee. He was one of the leaders in the liberal theology controversy of forty years ago. Cranston was the family name of his mother. The son went to Edinburgh University, where he was famous as an athlete, took his M.B., Ch.B. in 1904, and proceeded M.D. in 1909. For several years he won the university championship over the hurdles, the long jump, and the high jump; he was also for a year Scottish amateur champion hurdler. After a period as house-surgeon at Clayton Hospital, Wakefield, he returned North and settled in practice at Methil, a coast village in Fife, in 1906. He served also as medical superintendent of the Wemyss Memorial Hospital near by.

Always a most likeable man, with charm and grace of manner, he soon became known and esteemed among his colleagues in the Fife Branch, which from its formation was an active and influential unit in B.M.A. affairs, especially during the troubles which accompanied the inception of National Health Insurance. About 1911 Anderson became honorary secretary of the Branch and a member of the Scottish Committee. He was secretary also of the Panel Committee, and, when the first European war broke out, of the Local Medical War Committee. The war, however, presently took him away from the coast of the Firth of Forth to the banks of the Nile, where he served as surgical specialist to the 69th General Hospital. Soon after his return in 1919 he was called to the Deputy Medical Secretaryship of the Association. His colleagues in Fife mingled their regret at the severance with their pride in the fact that "Anderson of Denbeath" should have been given this opportunity of helping to shape medical policy in the post-war world. They gave him a presentation of silver plate and expressed their affection for him and their respect for his qualities.

At the time George Anderson entered on his work at the former London home of the Association, 429, Strand, the war machine was going into reverse. The work of the Central Medical War Committee, which had absorbed so much of the energy of headquarters for four strenuous years, was now directed in the main to help in individual cases of hardship on demobilization. The rumblings of the National Health Insurance controversy, silenced during the war, began to be heard again, though the note was different. The Insurance Acts Committee under the brilliant leadership of Dr. (afterwards Sir Henry) Brackenbury was engaged on the formidable task of consolidating the new service so that it yielded the greatest public good, and of endeavouring so to improve the terms and conditions as to yield as much satisfaction as possible to practitioners. The secretaryship of the committee fell to Anderson's lot; it called for an immense amount of complex administrative work, and it was said of him that he knew the Insurance Acts and Regulations from end to end. Those were days when the Panel Conference met generally twice in the year and sat until midnight. Negotiations over terms of service were opened up with the most intractable of Ministers of Health, Sir Alfred Mond, afterwards Lord Melchett. Anderson did great service in preparing the Association's case at the first court of inquiry into the capitation fee, presided over by Sir Thomas Hughes, and the evidence for the subsequent Royal Commission. Even after he had become full Medical Secretary he retained his post at the right hand of the chairman of the Insurance Acts Committee, not, as he explained, because he lacked faith in his juniors, but because he felt that in a period which continued to be difficult it was an advantage to have someone who had had experience of previous negotiations. He was also identified with the work of the Science, the Ethical, and the Hospitals Committees, and took a share in formulating the hospital policy, a tedious but necessary piece of business undertaken in the early 'twenties.

Two excellent pieces of organization which lay outside the main stream of the Association's work and which owed a great deal to Anderson's enthusiasm and statesmanship were the National Eye Service and the National Register of Medical Auxiliaries. His secretaryship of the Ophthalmic Committee led on to an active share in the National Ophthalmic Treatment Board, which organized the National Eye Service in 1929. The National Register was established, after difficult negotiations, in 1933; he was a member of the Board of Registration, and took immense pains over a very delicate piece of work. Never did he lose in the grind of routine the zest for new achievement. He entered with vigour into the fight which the Association undertook in the Select Committee of the House of Lords against the proposal to register osteopaths. At every sitting of that committee there he was, conferring with the distinguished counsel who appeared for the Association, and marshalling the medical evidence. But in fact the later career of Anderson is the history of the Association. In deputations to Ministers, in innumerable conferences, in round-table discussions with representatives of other medical bodies, of hospitals, of trade unions, as well as in the routine business of the Council and its committees—committees which seldom sat for less than three hours—he was always the chairman's aide-de-camp, the spokesman's prompter, the man who attended to things, and when himself called upon to speak, always modestly firm and persuasive, and generally getting his way.

It was in 1932, following the Centenary celebrations, that he succeeded Dr. Cox as Medical Secretary. He had long been marked out for that promotion. Five years later, after reorganization at the head office, he became Secretary, the prefix "Medical" being dropped. This only meant that to his former duties and responsibilities were added many others on the business side. It must be remembered that in addition to

its more ordinary activities the Association is a considerable landlord and a large employer of labour.

In 1935 came the memorable meeting at Melbourne and the World Tour. The genius of Anderson for creating a spirit of good fellowship contributed to the success of the occasion, and after the voyage a number of members of the party publicly acknowledged his "unfailing courtesy and helpfulness." A more serious and exhausting mission awaited him in the winter of 1936–7, when he was sent to India in order that the Council might have first-hand information of the conditions of practice there. In less than three months he travelled over 10,000 miles on the Indian railways, visited 19 cities in 11 provinces, saw something of the principal medical colleges and a number of the schools, and obtained an insight into all forms of Indian medical practice. The members of the profession in India were greatly stimulated by the addresses he gave. One of his hosts in the Punjab said that before he came a very general remark among the members was, "The B.M.A. has done nothing for us," but after he had gone the remark was altered to, "We are the B.M.A." George Anderson was certainly the most travelled official the Association has ever had. In addition to visiting various cities on the Continent as the representative for Britain on the Association Professionnelle Internationale des Médecins, another long tour was undertaken early in 1939, when he visited the West Indies. The purpose of this journey was partly to enable him to recuperate after a protracted illness and partly to encourage the West Indian Branches. He visited Barbados, Trinidad, Grenada, and Jamaica, and was warmly welcomed by gatherings of members in each place.

The outbreak of the second European war brought to him a period of strain comparable only with that experienced by members of the Government and the heads of the Civil Service and the fighting Services. In the recruitment of doctors for the Forces, in holding the balance between civilian and military requirements, in endeavouring to redistribute doctor-power so as to meet the situation brought about by evacuation and large transfers of labour, his energy, tact, and wisdom were constantly at call. The Emergency Medical Service, the Protection of Practices Scheme, and various other pieces of organization, hurriedly called into being, required daily attention and looking ahead. He was the natural target for multitudes of questions, down to such matters as the allowance of petrol for a doctor's car or the calling up of a doctor's maidservant, and often a case which related only to one individual would necessitate a long correspondence and perhaps interviews. All this had to be done with a staff depleted of many experienced workers and recruited from the inexperienced.

Even while this wartime burden was being carried, and was actually expanding, there came the need to plan for the post-war period. The Medical Planning Commission was set up and issued its interim report. Then came the Beveridge report and the invitation from the Minister of Health to form a Representative Committee for conversations on the shape of future medical services. The implications of that invitation were instantly grasped and acted upon by Anderson. His statesmanship was again shown in the lead he gave, particularly in addresses in Manchester, Edinburgh, and Glasgow in the summer of 1943, entitled "Evolution, not Revolution," which steadied the position and influenced the discussions in the Association on the principles of the future service in anticipation of the Government's White Paper. But these multiplied labours, with an eager spirit which would permit no slackening and a physical frame which in recent years was far from robust, contributed to the serious breakdown in health which followed the Annual Representative Meeting of 1943.

To the good secretary no detail of his work is trivial. Anderson never became so absorbed in central concerns as to neglect the periphery. In normal times he took his full share of visits to Divisions, often involving long travelling, perhaps by night, to address the faithful few who turned up, unless, of course, some crisis brought an overflowing attendance. But his not over-prepared addresses, like his "Occasional Letters," carried an influence out of proportion to their rather incidental character. With the honorary secretaries of Divisions and Branches he cultivated a fraternal attitude. He knew their difficulties, having been an honorary secretary himself. He once expressed his dislike of letters which began, "I am sorry to trouble you": he was there, he said, to be troubled. To those who served under him at headquarters he was a considerate chief, always ready to make public acknowledgment of the good work of his juniors, and to give any buried talent an opportunity for emergence. But he possessed also a sense of humour and something of a philosophic detachment, and it was refreshing to catch the twinkle in his eye when a committee—or some members of it—was taking itself too seriously. Not that he ever lost dignity; an easy dignity came naturally to him, and a fine and agreeable presence marked him out in any assembly.

Of the Association and its ideals he was a zealous champion. Any attack upon it in the Press or elsewhere, or any misconstruction of its action, drew from him a reply which was all the more cogent for being so courteously expressed. He often lamented that, somehow, the good work that the Association was doing remained unknown to the mass of Association members and to the public.

In 1935 he was awarded the King's Jubilee Medal. At the Belfast Meeting in 1937 the Hon. LL.D. of Queen's University was conferred upon him In the speech at the graduation ceremony he was described as one who had "brought to the consideration of the questions which concerned the Association an alert and balanced mind, in sympathy with the difficulties of the general practitioner, but determined also to see that medicine was so organized as to function with the greatest possible efficiency in advancing and maintaining the health of the community."

In 1941 he was elected a Fellow of the Royal College of Physicians of London under the special by-law, and in January, 1942, he received the Commandership of the Order of the British Empire. His home life was ideally happy, and with Mrs. Anderson, who accompanied her husband on many Association occasions, including his long tours on Association business, the deepest sympathy will be felt among a wide circle of friends in the profession and far beyond it.

Personal Tributes

Sir KAYE LE FLEMING writes:

The news of the death of the Secretary will come as a shock and arouse a sense of grievous loss and concern in the minds of all members of the Association and, indeed, of most members of our profession. Few outside the Council were aware of the grave anxiety felt for his health since his sudden breakdown in October. Only those with inside knowledge of the organization at B.M.A. House can appreciate the great strain borne by the Secretary, especially during the last few years, and his determination not to spare himself in the effort and responsibility which his post involved. No one could persuade him to take the break from work necessary to meet the strain on his health, and his manner and appearance helped to disguise the heavy calls he was making on his strength. It may truly be said that George Anderson gave his life to the Association and his profession.

Anderson came to the B.M.A. just after the last war, at a time when the Association was suffering from the setback of the introduction of the National Health Service followed by four years of war. He succeeded Dr. Alfred Cox in 1932, and lived to see the membership of the Association more than doubled, a steady increase of more than one thousand members for each year of his connexion with headquarters. His trip to Canada in 1930, his management of the "Round the World Tour" in 1935, his special visit to the West Indies, and to India in 1937 made him a familiar figure to the leading members of our profession throughout the British Empire and in America. Everywhere he carried with him the capacity of associating his organizing professional duties with the personal charm which endeared him to all he met. Surely no other member of our profession could ever count such a host of friends and admirers. The full share of the increased influence and prestige of the Association which we owe to him will take time to appraise and appear in proper perspective, but his name will be indelibly inscribed in our history.

It is not easy to pay tribute to the many qualities that helped to make Anderson the outstandingly successful man he was. The alert upright figure, the easy conversational gifts and charm of manner attracted at once. His power of rapid concentration on successive diverse problems, combined with an

inexhaustible capacity for work, astonished even those who continually shared his labours. Easy of approach, he had the great gift at his command of mixing with all men. In delicate negotiations with Government Departments, however difficult, he never made an enemy. In public speaking clear and to the point, delivered with sincerity and dignity and with just the right touch of humour when required, he always pleased his audience. Those who were closest to him in his work would perhaps place highest in the list of his gifts the sure perception of principles of policy and his foresight in preparing for future changes which appeared to him inevitable.

Much more could be said, and will be said, ere justice is done to so fine an example of our profession. Anderson is gone, and at the very moment that we need him most. The B.M.A., the profession, and the public are the poorer by his loss. Our great organization has received a shock which for the moment leaves it stunned. Without him our resources to meet the crisis that lies ahead will be severely taxed, but we shall never forget the hand that has guided us so far with success.

To Mrs. Anderson will go a wave of sincere sympathy, and from all those members in particular who remember the graceful part she played in the big social events of our Annual Meetings.

Dr. H. GUY DAIN, Chairman of Council, writes:

To those who have known him since his appointment to the Association, the B.M.A. without George Anderson does not seem possible. No association ever had a more single-minded servant. The B.M.A. may be said to have been both his work and his hobby. Its interests were never out of his thoughts, and he was always planning for its advancement. And with what success its growth during his Secretaryship, with the increasing influence of the Association, both in the social life of the country as well as among doctors, is eloquent testimony. He really did live for the B.M.A. His boundless energy was always at the service of the Association. As Secretary to the Insurance Acts Committee, in earlier years, and all through his office, his work to improve the insurance medical service and the conditions of insurance practitioners has been continuous, and is fully recognized by all. An outstanding example of his foresight and statesmanship is the present Central Medical War Committee. While war was yet an uncertain threat, he was responsible for setting up a card index of all registered practitioners with their qualifications, experience, and ability to undertake war work. This index was completed and ready for immediate use for the recruitment of doctors as soon as war broke out, and has been of inestimable value to the country as well as to doctors.

And of Anderson the man. Those of us who have known and worked closely with him for so long, are mourning a dear friend. One to whom we could always take our problems, and be certain of a good-tempered and sympathetic reception, and of help in the solution. One of the attractions of attending a meeting in London was the opportunity of a talk with George before and after the meeting. His cheerful friendliness and welcoming smile will always remain. And outside the B.M.A. he did enjoy his golf and his game of bridge.

His memory will live on. The Association will reap the reward of his labours in the years to come. In future days, as the results of his work are incorporated in the machinery of the medical profession, there will be many doctors who with grateful hearts will want to say, "Thank you, Anderson." The whole Association mourns with Mrs. Anderson.

Mr. H. S. SOUTTAR writes:

Only those who have worked closely with Anderson in the last few years can realize what the British Medical Association and the whole country have lost. He had become so essential a part of every phase of our professional organization that it is difficult to think of it apart from his inspiring personality. For years he has been our ambassador at the Ministry of Health, and few decisions were reached without his advice. The Planning Commission was his own idea, and to him we owe the co-ordination of our whole profession which has resulted largely from its work. The Medical War Relief Fund was established at his suggestion. But his great achievement has been the organization of recruitment of our profession for war, of the whole of which he was the very pivot and mainspring. On the Priority Committee, the Central Medical War Committee, the Services Committee, and on all the ramifications of the intricate problems involved, he worked with untiring energy, with no thought of the cost to himself.

In the arduous days which lie ahead we shall sadly miss his wisdom and his enterprise, but those who follow him will reap the reward of his great labours. Beyond any question he has sacrificed his life in the service of his country, but not before he had laid the foundation of great future progress. He has set before us great ideals, and to follow them is the highest tribute we can raise to his memory.

Dr. MONTAGUE SYDNEY WOOLF, who died in America on April 20 last, was born in Plymouth and received his early education in Birmingham, after which he spent a year at Bonn and Heidelberg with a scholarship in modern languages. But his true calling was medicine, which he studied at University College Hospital, London, winning a scholarship in anatomy and physiology and medals in pathology and clinical surgery. He qualified M.R.C.S., L.R.C.P. in 1914, and during the last war served with the R.A.M.C. and in the British Naval Transport Service. After the close of the war Dr. Woolf settled in San Francisco, where he became resident surgeon at the University of California Hospital. In 1925 he visited London for postgraduate study in proctology. His publications were largely on matters connected with that specialty, but he also wrote a textbook *Principles of Surgery for Nurses*. In an obituary notice appearing in *California and Western Medicine* Dr. Richard W. Harvey has paid tribute to Dr. Woolf's gentleness, devotion, and friendliness.

We regret to announce the death on Dec. 23, 1943, at Haslemere, Surrey, of Mr. ARTHUR HENRY WILLIAM HUNT in his 78th year. He studied medicine at the Westminster Hospital, where he won a scholarship, and took the L.R.C.P. diploma in 1888 and the M.R.C.S. in 1889. After serving as house-surgeon at the Westminster he began his long connexion with the Royal Hospital, Wolverhampton, as house-surgeon, later becoming honorary gynaecologist and a member of the visiting surgical staff. On his retirement the governors of the hospital elected him consulting surgeon. He held a commission as captain R.A.M.C.(T.) during the last war, and was awarded the M.B.E. in 1920. In 1925 Mr. Hunt gave up active work and went to live in Surrey. He had joined the British Medical Association in 1893 and was chairman of the Guildford Division 1931–2. In recognition of his work for the profession during many years of practice in the Midlands the Birmingham Branch elected him an Associate Member.

Dr. JOHN HARVEY KELLOGG, who died last month at Battle Creek, Michigan, towards the close of his 92nd year, combined a number of diverse qualities which made him almost a legendary figure. First and foremost he was a health reformer, with ideas much in advance of his time; he was beyond question a philanthropist; he had keen business sense and ability, coupled with a gift for showmanship; and his dominant personality and unflagging zest for life were part and parcel of the wonderful physique which bore him along into advanced old age with his faculties in full working trim. In matters of regimen Dr. Kellogg practised what he preached for 70 years; he was a walking testimonial to the rules of health which he had laid down for the inmates of the Battle Creek Sanitarium and which he spread far and wide through his magazine *Good Health*. Almost up to the end he was hard at work, with his chief dietitian, on a *Vitamin Cook Book*, bringing his ideas on nutrition and dietetics into line with modern knowledge. On his 90th birthday (Feb. 26, 1942) he received messages of congratulation from people of the highest standing in the U.S.A., and the citizens of Battle Creek gave him a framed address and a banquet in honour of "one who loved his fellow men." Dr. Kellogg graduated M.D. from the Bellevue Hospital Medical College, New York, in 1875, and his lifelong work in and for the sanitarium began as a temporary one-year job. Later he launched the cereal food business which made his name a household word. People from many other countries went to his institution for a complete physical overhaul; others spent their holidays at Battle Creek as out-patients, following a prescribed course of diet and exercise and attending the clinic for practical guidance. In his younger days he often toured Europe, visiting medical centres in Rome, Vienna, Paris, London, Berlin, and Petrograd, picking up ideas to put into practice at Battle Creek.

The Services

The D.S.O. has been awarded to Major (temp. Lieut.-Col.) P. R. Wheatley, R.A.M.C., and the M.C. to Capt. (temp. Major) J. B. McEwen and Capts. G. Rigby-Jones and J. Rutherford, R.A.M.C., in recognition of gallant and distinguished services in Sicily.

Surg. Lieut.-Cmdr. R. G. Reid and Acting Surg. Cmdr. E. G. Thomas, R.N.V.R., have been awarded the R.N.V.R. officers' decoration.

The following appointments and mentions in recognition of distinguished services in Persia and Iraq have been announced in the *London Gazette*:

C.B.E. (Military Division).—Major-Gen. (temp.) J. G. Gill, D.S.O., O.B.E., M.C., late R.A.M.C.

O.B.E. (Military Division).—Col. (temp.) W. H. A. D. Sutton, R.A.M.C.

M.B.E. (Military Division).—Capt. (temp. Major) M. S. Boparai, I.M.S.

Mentioned in Dispatches.—Major (temp. Lieut.-Col.) W. A. D. Drummond, Major D. J. O'Ryan, Capt. T. Ronai, R.A.M.C., Col. (temp.) K. S. Master, M.C., Capts. (temp. Majors) J. H. Bowie, and J. S. Gill, and Subadar G. Duraikrishnan, I.M.S.

The *London Gazette* announces the appointment to M.B.E. (Military Division) of Fl. Lieut. S. T. Winter, R.A.F.V.R. The announcement reads as follows:

When returning from an operational sortie one night in July, 1943, a Stirling aircraft crashed whilst attempting an emergency landing. The bomber burst into flames. Fl. Lieut. Winter, who was the medical officer on duty, immediately proceeded to the scene. Regardless of his own safety he assisted the crew to escape and entered the burning fuselage in a vain endeavour to release the mid-upper gunner, who was trapped upside down in his turret. Despite burns to his head and face, Fl. Lieut. Winter then attended to the needs of the injured members of the crew. Throughout he displayed high courage and devotion to duty.

The *London Gazette* has announced the appointment as M.B.E. (Military Division) of Temp. Surg. Lieut. G. D. Taylor, R.N.V.R., for services to the injured after an explosion at sea.

CASUALTIES IN THE MEDICAL SERVICES

Died in East Africa.—Capt. J. B. C. Murdoch, R.A.M.C.

Killed.—Lieut. V. L. Cooper, R.A.M.C.

Killed in action.—War Subs. Capt. J. E. T. Munn, R.A.M.C.

Wounded.—War Subs. Capts. D. J. Fraser, L. C. Montgomery, M. I. Robinson, and B. C. Rowlands, and Major J. D. Sprague, R.A.M.C.

DEATHS IN THE SERVICES

We regret to learn that Lieut.-Col. DONALD UVEDALE OWEN, M.D., R.A.M.C., has died in Africa as the result of an illness contracted while on active service. He was honorary physician to out-patients at the Liverpool Royal Infirmary and held various other clinical appointments after winning many academic honours. S. B. H. writes: Donald Owen was in the tradition of, and succession to, a band of medical men of Welsh extraction who have enriched the profession on Merseyside during the past three decades. Their enduring qualities of strong humanity and kindliness of nature, combined with medical skill, were possessed to the full by Donald Owen, and his passing after a relatively short but busy and successful career as a physician will leave a sense of personal loss with his very many friends. As a friend since student days, may I pay tribute to one whose influence and example I, with many more of his friends and colleagues, will carry with me as a lasting memorial.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Congregation held on Dec. 11 the degrees of M.B., B.Chir. were conferred by proxy upon J. R. Handforth.

The following candidates have been approved at the examinations indicated:

FINAL M.B.—*Part I (Surgery, Midwifery, and Gynaecology):* M. S. Adams, C. G. Attenborough, H. H. E. Batten, T. S. L. Beswick, P. L. Blaxter, D. Brazier, D. W. Burnford, J. D. Burton, I. J. Carré, I. R. Clout, A. Comfort, R. P. Cook, P. B. S. Cooper, P. D. B. Davies, C. D. Drew, E. D. Dyson, R. D. Eagland, D. A. W. Edwards, F. H. Epstein, D. M. Evans, J. J. Fleminger, M. A. Floyer, P. H. Friedlander, J. W. Fullerton, S. A. M. Garibian, H. M. Giles, M. T. Gillies, M. L. Graeme, C. R. H. Green, J. A. Harrington, C. E. Hartley, G. Hartridge, F. N. Hicks, I. S. Hodgson-Jones, C. B. Holmes, N. S. Hooton, G. I. C. Ingram, R. E. Irvine, D. G. James, M. C. Joseph, A. G. Leatham, J. Lorber, P. F. Lucas, D. W. R. Lyle, M. B. McIlroy, I. L. McKelvie, R. M. MacPhail, I. A. Magnus, M. B. Matthews, P. D. Mort, M. W. L. Mutch, K. N. V. Palmer, T. J. S. Patterson, J. C. R. Payne, P. B. Philip-Smith, P. D. G. Pugh, K. E. E. Read, T. J. Rendle-Short, J. Roche, L. J. Rowley, R. C. Roxburgh, F. A. R. St. John, B. Schofield, F. D. Schofield, J. A. Shiers, J. F. N. Sidebotham, K. W. Symons, M. Symons, W. E. W. Tilleke, J. H. M. Tilley, R. G. Turner, J. Upsdell, D. R. D. Vanstone, D. G. Veater, N. T. Welford, D. P. Wheatley, A. P. Wingate, R. A. Womersley, K. A. A. Wray, G. S. Yeoh.—K. A. C. Bowen, P. J. Coope, M. Farquharson, R. C. A. Hunter, E. M. Kingsley-Pillers, S. M. Martin, K. L. Prendergast, M. K. E. Reaney, H. F. Sebag-Montefiore, M. M. Tunstall-Behrens, B. J. Whitfield.

Part II (Principles and Practice of Physic, Pathology, and Pharmacology): D. Ainslie, F. Ashton, V. L. Billington, A. J. Briggs, L. L. Bromley, A. Carpenter, K. Chitty, F. A. L. de Cunha, M. P. Durham, J. W. Evans, A. M. H. Fisher, W. M. Foreman, J. A. Hallinan, M. Hemming, R. F. Hobson, M. D. King, W. Kwantes, J. B. Lyon, D. A. Mitchison, R. G. F. Parker, M. B. Paul, W. R. Probert, T. J. Rendle-Short, B. W. Rhodes, L. J. Rowley, I. A. Roxburgh, F. A. R. St. John, A. N. Smith, D. H. K. Soltau, P. G. Somerville, R. G. Tasker, J. H. M. Tilley.—M. K. E. Reaney.

UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN MEDICAL RADIOLOGY.—Olga Bauerova, Phyllis Burville-Holmes, Elspeth M. Ledlie, M. G. Magan.

UNIVERSITY OF BRISTOL

The following candidates have been approved at the examinations indicated:

CH.M.—Marjorie O. Dunster.

FINAL M.B., CH.B.—(Mrs.) Rukmini L. Ashley, Janet Baker, C. K. Bridge, Margaret P. Drew, J. Eskell, [1]E. C. Hamlyn, [1]Beryl M. Hinckley, P. A. James R. Maggs, (Mrs.) Margaret Pardoe, (Mrs.) Marjorie J. Williams. *In Group I (completing examination):* Elizabeth N. R. Wilson.

[1] Distinction in Public Health.

UNIVERSITY OF SHEFFIELD

The following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—*Parts II and III:* R. H. Canter, B. S. Crawford, R. Ellison, H. Hardy, Margaret S. Hunt, L. A. Storer, Helen M. H. Twidle.

QUEEN'S UNIVERSITY, BELFAST

The following candidates have been approved at the examinations indicated:

M.D.—J. W. Myllan (with gold medal), T. G. Milliken.

M.B., B.CH., B.A.O.—[1]Denise Corkey, [1]J. S. Elwood, [1]J. H. Johnston, [1]K. G. Malcolmson, [1]Margaret Mitchell, [1]J. H. McK. Pinkerton, [1]H. M. Stevenson, A. P. S. Ainley, W. J. Allen, M. W. J. Boyd, M. Brown, W. L. Burrowes, J. F. J. Campbell, R. D. G. Cowden, R. D. G. Creery, Esther M. Davis, W. S. Davis, J. Donaghy, R. J. Donaldson, J. Ferguson, S. J. Gibson, G. M. Glass, F. G. Gront, D. G. F. Harriman, P. P. Jackson, J. Jefferson, Nora Kelly, R. S. M'Crea, G. F. G. M'Dowell, J. K. Magennis, A. L. Mathewson, T. F. B. Minford, J. Mitchell, T. M. Roulston, N. Sanderson, S. Smith, Marion G. Summ, C. M. Taggart, Adeline H. Thompson, I. G. Watchman, Margaret R. Wilson.

[1] Second-class honours.

SOCIETY OF APOTHECARIES OF LONDON

At a recent meeting of the Court of Assistants, with Sir Stanley Woodwark, Master, in the chair, Surg. Rear-Admiral C. P. G. Wakeley was elected to a seat on the Court, and Mr. Ernest Busby was appointed Clerk to the Society.

The following candidates have satisfied the examiners in the subjects indicated:

PATHOLOGY, BACTERIOLOGY, AND FORENSIC MEDICINE.—P. L. Brangwin, J. L. Brennan, D. E. M. Brown, N. J. Caldwell, D. Cappon, K. R. J. Coates, P. V. G. Dawson, E. L. Dutta, R. J. H. Hodges, F. R. S. Knight, P. E. Mars, D. A. Tait, E. G. Wright, S. Yaffe.

SURGERY.—A. W. Banks, A. E. Bernstein, J. L. Brennan, D. E. M. Brown, C. G. Martin, J. Middleton, D. A. Tait, A. G. Wolstenholme.

MEDICINE.—A. W. Banks, D. E. M. Brown, P. V. G. Dawson, R. K. Haslam, F. R. S. Knight, P. E. Mars, C. P. Perkins, D. A. Tait, E. G. Wright.

MIDWIFERY.—E. A. Balls, J. L. Brennan, D. Cappon, P. V. G. Dawson, C. M. F. Fiducia, R. J. H. Hodges, M. W. Johnston.

The diploma of the Society was granted to C. M. F. Fiducia and S. Yaffe.

Medical Notes in Parliament

Mass Radiology Units for Over-seas.—Dr. MORGAN asked on Dec. 14 whether any steps had been taken to secure durable transportable mass radiology sets and trained personnel for use in various Colonies. Col. STANLEY replied that the supply position was such that at the present time it was not possible to arrange for a satisfactory type of mobile unit for use in tropical conditions to be built in this country. The position was kept under review.

Immunization against Tuberculosis.—Dr. SUMMERSKILL inquired on Dec. 16 what action the Minister of Health was taking following a request from the Tuberculosis Association that recognition should be given to the importance of immunization against tuberculosis. Mr. WILLINK said he knew the Tuberculosis Association had been giving attention to this subject. Immunization against tuberculosis was still surrounded by numerous difficulties, but he was arranging for his officers to discuss the whole matter with representatives of the association.

Treatment of Arthritis.—Mr. WILLINK told Major Lyons on Dec. 16 that the cause and treatment of arthritis continued to receive the active attention of the Empire Rheumatism Council, whose last report was published in December, 1942. Research into causation was restricted by the lack of any promising fresh line of approach. New methods of treatment were tried as they became available. He was not aware of any tests that had been or were being made in this country of the efficacy of electrically activated ergosterol. He was making inquiries as to the position in the United States.

Silicosis Claims.—Mr. HERBERT MORRISON said on Dec. 17 that since July 1 the medical board had received 2,213 applications from South Wales coal-miners under the Various Industries (Silicosis) Scheme, 1931, or the Coal-mining Industry (Pneumoconiosis) Scheme, 1943. In 1,282 of these cases the board had not yet come to a decision. As from July 1 last the strength of the medical board in South Wales was doubled, and further assistance was being given so far as was practicable. Claims on the medical profession at the present time made it very difficult to secure the services of qualified men who could devote time to this work, and some delay was unavoidable.

Notes in Brief

Thirty-two British prisoners of war recently repatriated from Germany were classified as suffering from mental and nervous affections justifying repatriation. The number of prisoners of war in Germany classified as suffering from mental ailments was small.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* there was a large fall in notifications during the week: scarlet fever down by 628, acute pneumonia by 363, whooping-cough by 241, diphtheria by 84, dysentery by 33, and measles by 28.

Influenza deaths in the great towns numbered 1,109, or 39 fewer than in the preceding week. (Returns for the week ending Dec. 25 show that influenza deaths are down to 690.) The largest number of deaths registered during the past five weeks were in London 366, Birmingham 211, Manchester 207, and Liverpool 137. Liverpool was the only one of these cities for which an increase was recorded during the week ending Dec. 18.

During recent weeks scarlet fever, whooping-cough, and measles have been steadily declining in incidence; measles is at its lowest level since registration began in 1939. The drop in acute pneumonia was greatest in the North, the largest falls being in Yorks West Riding by 117, and in Lancashire by 70.

The chief centres of dysentery were London 47, Essex 13, Lancashire 15.

In *Scotland* similar trends are noticed. The largest falls were 75 for whooping-cough, 77 for scarlet fever, and 47 for diphtheria. Cerebrospinal fever, diphtheria, and scarlet fever were at their lowest incidence since last summer.

In *Northern Ireland* scarlet fever rose by 30, and 67 of the 116 cases were notified in Belfast.

Diphtheria

The seasonal distribution of diphtheria has been well marked in recent years, with an incidence during the winter of approximately twice that of the summer. The seasonal rise in England and Wales during the present year has not been as distinct, and the decline in the number of notifications during the past five weeks is in contrast to experience of similar periods. It appears that the campaign for immunization has at last begun to have an effect on the incidence of diphtheria. The notifications, summed in five-week periods, compared with the immediately preceding years are:

Weeks	1943	1942	1941	1940	1939	1938	1937
1–5 ..	4,286	4,736	6,057	3,666	6,278	8,726	6,225
6–10 ..	4,121	4,341	5,349	3,409	5,795	7,886	5,782
11–15 ..	3,835	4,083	4,938	3,414	4,381	6,733	4,927
16–20 ..	3,264	3,460	4,500	3,402	3,981	5,170	4,646
21–25 ..	3,043	3,216	4,391	3,568	3,718	4,735	4,774
26–30 ..	2,960	3,515	4,150	3,924	4,350	5,043	4,776
31–35 ..	2,708	3,350	3,639	4,056	3,756	4,745	4,518
36–40 ..	3,610	4,363	4,728	5,315	4,363	5,945	6,638
41–45 ..	3,710	4,620	5,001	6,522	4,782	6,933	8,385
46–50 ..	3,222	4,966	5,459	6,925	4,891	7,562	8,466

The notifications are now only 66% of those for the corresponding period of 1939, the lowest of the recent corresponding periods. The actual position may be more favourable than the returns indicate, since there has been a large increase in the error of diagnosis. This error in the immediate pre-war period was of the order of 30% in London, but lately it has been in the neighbourhood of 50% in the experience of some hospitals, and it is probable, although no figures are available, that this increase is general throughout the country. General practitioners will no doubt feel encouraged by the figures given to back up for all they are worth the campaign so successfully begun by the Ministry of Health.

The Week Ending December 25

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,786, whooping-cough 1,244, diphtheria 498, measles 363, acute pneumonia 2,079, cerebrospinal fever 53, dysentery 96, paratyphoid 1, typhoid 2. Deaths from influenza in the great towns numbered 690.

No. 50

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 18.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each Infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1943 (a)	(b)	(c)	(d)	(e)	1942 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	64	5	16	—	3	96	5	26	3	2
Deaths		2	—				—	—		
Diphtheria	550	4	131	104	43	1,008	36	265	66	30
Deaths	16	1	3	5	—	27	2	3	3	—
Dysentery	133	47	47	—	—	113	24	44	—	1
Deaths				—	—				—	—
Encephalitis lethargica, acute	4	—	1	—	—	1	—	2	—	—
Deaths		—					—			
Erysipelas			59	5	4			69	15	2
Deaths		1					—			
Infective enteritis or diarrhoea under 2 years				10					24	
Deaths	42	8	11	14	—	51	6	8	17	5
Measles	416	47	59	34	1	13,282	498	569	55	28
Deaths	1	—	—	—	—	14	2	1	—	2
Ophthalmia neonatorum	83	3	18	1	1	76	5	12	—	1
Deaths										
Paratyphoid fever	1	—	—	—		9	1	2	—	
Deaths	—	—			—	—	—	—		—
Pneumonia, influenzal*	2,593	220	66	21	10	1,003	62	9	6	4
Deaths (from influenza)	1,109	129	52	3	3	26	—	4	2	2
Pneumonia, primary			437	18				232	31	
Deaths		145		17	15		—		19	10
Polio-encephalitis, acute	1	1				—	—			
Deaths		—					—			
Poliomyelitis, acute	6	1	—	1	—	12	1	1	8	—
Deaths		—					—			
Puerperal fever		2	18	2	—		2	7	5	—
Deaths		—					—			
Puerperal pyrexia†	132	4	17		1	148	12	15		2
Deaths										
Relapsing fever	—	—			1	1	—			—
Deaths										
Scarlet ever	1,936	145	239	35	116	2,620	176	383	95	50
Deaths	1	—	1	1	—	5	—	2	—	—
Smallpox	—	—	—		—	—	—	1		—
Deaths			—	—	—			—	—	—
Typhoid fever	3	—	1	104	—	9	1	1	6	1
Deaths	—	—	1	—	—	—	—	—	1	—
Typhus fever	—	—	—	—	—	—	—	—	1	—
Deaths				—	—				—	—
Whooping-cough	1,400	123	158	47	24	1,160	81	60	44	5
Deaths	13	2	6		1	7	—	1	6	—
Deaths (0–1 year)	406	53	84	60	18	348	49	69	71	23
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	8,502	1,404	830	301	166	4,567	672	615	240	129
Annual death rate (per 1,000 persons living)			18·7	19·8	‡			13·8	16·0	‡
Live births	5,825	728	815	316	244	5,901	679	828	322	249
Annual rate per 1,000 persons living			16·6	20·8	‡			17·1	21·5	‡
Stillbirths	208	20	38			213	20	32		
Rate per 1,000 total births (including stillborn)										

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

A meeting of the Middlesex County Medical Society will be held at Hillingdon County Hospital on Saturday, Jan. 8, at 2.30 p.m., when demonstrations of medical and surgical cases, pathological specimens, and new apparatus will be followed by papers by Dr. T. E. D. Beavan on chemotherapy in influenzal meningitis; Dr. C. G. Barnes on hypoglycaemia after partial gastrectomy; and Mr. L. Fatti, interim report on treatment of carcinoma of the lung.

At a meeting of the Pharmaceutical Society of Great Britain, to be held in the Society's house, 17, Bloomsbury Square, London, W.C., on Thursday, Jan. 13, the Hanbury Memorial Medal will be presented to Sir Henry H. Dale, M.D., P.R.S., Director of the Laboratories of the Royal Institution. After the presentation Sir Henry Dale will give an address on "The Natural History and Chemistry of Drugs." The chair will be taken by the President at 7 p.m., and a large attendance of members and friends is hoped for.

At a meeting of the Tuberculosis Association to be held at Manson House, 26, Portland Place, W.1, on Friday, Jan. 21, Mr. J. E. H. Roberts will give his presidential address at 3.15 p.m. on "A Surgical View of Timing." It will be followed by three short papers: "The Local Application of Promanide," by Dr. A. D. Lapp (Toronto); "Some Observations on Tuberculosis of the Lungs and Larynx," by Dr. N. Lloyd Rusby; and "The Examination of Tuberculosis Contacts: A Minimal Scheme," by Dr. Brian Thompson.

A Radiotherapy Section meeting of the Faculty of Radiologists will be held at 32, Welbeck Street, W., on Saturday, Jan. 22, at 10 a.m., when there will be a discussion on "The Indications for and Effects of Irradiation of the Pituitary Gland."

A meeting of the Association of Industrial Medical Officers will be held at 11 a.m. on Saturday, Jan. 22, 1944, at the London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. The morning session will be devoted to private business. In the afternoon a discussion will be held on injuries and infections of the hand. Openers: Mr. R. M. Handfield-Jones, F.R.C.S., and Dr. P. H. Jayes.

Series of lectures on the anatomy and physiology of the nervous system, suitable for a Diploma in Psychological Medicine, are being held this month at the Maudsley Hospital, Denmark Hill, S.E.5, on Mondays, Wednesdays, and Fridays, from 2 to 4 or 5 p.m., beginning on Jan. 3. The fee for the course is £3 3s., which is payable at the time of enrolment. Series of lectures on psychology and medical psychology will be arranged to take place during February, and all aspects of psychiatry required for Part II of the D.P.M. examination will be dealt with during the following months. All inquiries should be addressed to Dr. W. W. Kay, acting hon. director of the Maudsley Hospital Medical School, Central Pathological Laboratory, West Park Hospital, Epsom. Telephone No.: Epsom 1408.

The Nutrition Society has arranged two whole-day conferences in London on "Budgetary and Dietary Surveys of Families and Individuals," the first to be held on Saturday, Feb. 5, and the second in the early part of May. At the meeting on Feb. 5 at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., the chair will be taken by Sir John Orr. The matters for discussion are: (1) methods of budgetary and dietary surveys; (2) organization of large-scale surveys; (3) the statistical validity of methods used in such surveys; (4) relation of expenditure on food to other family expenditure. The speakers will include Mr. A. G. Jones (Ministry of Food), Dr. E. R. Bransby (Ministry of Health), Mr. F. le Gros Clark (Children's Nutrition Council), Prof. M. Greenwood, F.R.S., Dr. A. Bradford Hill, Prof. A. L. Bowley, Mr. D. Caradog Jones, and Dr. E. H. M. Milligan. Further particulars about the meetings and about the Nutrition Society can be had from the hon. secretary, Dr. Leslie J. Harris, Nutrition Laboratory, Milton Road, Cambridge.

The next special film session for doctors and allied personnel will be held at the Odeon Theatre, Broadmead, Bristol, on Sunday morning, Feb. 6, starting at 10.45. Among the films to be shown are "Mass Radiography" and recently completed films on head lice, tuberculosis, and nutrition and mass catering. Admission is free to doctors and qualified medical personnel only. Descriptive programmes may be obtained on application to the Medical Officer of Health, Kenwith Lodge, Westbury Park, Bristol 6. Early application is advised, as the number of seats available will be limited.

The Council of the Royal Medical Foundation of Epsom College will, in March next, award a "France" Pension of at least £30 per annum to a necessitous medical man, fully 55 years of age, who has been registered for five years. Forms of application for this vacant pension may be had from the Secretary's Office, Epsom College, Surrey, and must be completed and returned by the morning of Jan 31.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Angina Pectoris

Q.—*May I have detailed information about the use of testosterone propionate and nicotinic acid in the treatment of angina pectoris. My questions are: (1) What is the right dosage of either of the two preparations in the treatment of angina? (2) In what cases of angina and for how long are they to be given? (3) What is the theoretical explanation of their use in angina pectoris?*

A.—The action of nicotinic acid in angina pectoris probably depends upon its vasodilating property. There is no standard dose, the correct one being the amount which produces the desired effect without producing unbearable flushing. Up to a gramme in many divided doses has been given. The action of testosterone propionate is probably similar, though other factors may possibly be involved. Hypogonad patients treated with androgens usually experience an increased sense of well-being, and this fact may contribute to the good results reported. Angina is often a symptom of hypothyroidism, and testosterone raises the basal metabolic rate. In rats, male hormones increase the size and functional efficiency of the heart muscle fibres. Nevertheless it seems likely that the vasodilator effect of androgens is the important factor in the treatment of angina. The dose usually employed is 50 to 100 mg. a week of testosterone propionate intramuscularly. If good results are obtained, a maintenance dose of methyl testosterone may be given, the dose being four times the effective dose of the propionate. The tablets of methyl testosterone are put between the upper lip and the gum and allowed to dissolve slowly. Whether nicotinic acid or methyl testosterone is used, it is necessary to continue treatment indefinitely. Though good results have been reported by many observers, especially with androgenic treatment, I must confess that I have not been greatly impressed by my own experience.

Delayed Menarche

Q.—*As medical officer to two large boarding schools for girls I am convinced there has been a large increase in the number of girls reaching the age of 16 without having ever menstruated. This has been noted during the last two years. What is the reason, and what is the most satisfactory treatment?*

A.—In matters of this kind it is misleading to draw conclusions from general clinical impressions, or even from careful notes which deal with a comparatively small number of cases. Many observers have done so in the past, and this explains the many varying statements in medical literature regarding the age of the menarche and the factors which affect it. It is commonly stated that the average age for the onset of menstruation in Great Britain is about 14 years and the upper limit of normal is 16. Yet W. P. Kennedy (*J. Obstet. Gynaec. Brit. Emp.*, 1933, **40**, 792), in a review of 10,219 women of hospital class, found that 2,688 did not menstruate until they were 16 or over. The mean was 15.037 ± 0.011, with a standard deviation of 1.707. The inquirer should refer to this paper, in which he will find comparable figures published in Russia, Prussia, and Italy—each showing similar results.

There is general agreement that race, extreme climatic conditions, environment, social status, etc., can affect the age of the menarche. Thus, delayed puberty or amenorrhoea is said to occur more frequently in girls subjected to an "institutional life"—e.g., girls in boarding school and nurses during hospital training. But judging by the contrary statements as to the exact effect exerted by factors of this kind, it seems clear that most have been made on evidence which would not satisfy present-day scientific standards.

In view of considerations of this kind, the assumption in the question cannot be accepted without further data. Until it is proved it is pointless to enlarge on possible explanations, though it would be easy to postulate change in diet, the war and its attendant anxieties and strains, altered facilities for recreation, etc. It should

be remembered that it is common under any circumstances for menstruation to be delayed beyond the 16th birthday, and such delay does not necessarily imply any abnormality. The premature employment of any form of hormone therapy should therefore be avoided as needless and possibly harmful. In such cases attention should be paid to the girl's general physical and mental development. If this is normal, then the girl and her parents should be reassured. The only treatment necessary is to ensure that the girl is living a healthy life, not overworking, occupying her leisure hours suitably, and receiving a diet adequate in all respects. If, however, there is other evidence of endocrine disturbance, then complete investigation should be carried out to determine its nature before prescribing any hormone therapy. In a girl otherwise healthy in mind and body, amenorrhoea alone rarely justifies special investigation and treatment until she reaches the age of at least 17, and possibly 18 years.

Menopausal Arthritis

Q.—*About the menopause women are very susceptible to muscular or arthritic pains for which no focal infection can be traced. So common is its incidence that, like flushes, many women attribute it to endocrine dysfunction. Does proof, apart from clinical, support this claim, and what have been the results of oestrogenic treatment?*

A.—Apart from clinical observations there is little reliable evidence in support of the view that rheumatic disorders at the menopause are due to endocrine dysfunction. Tempelaar and van Breemen carried out observations on 142 women whose rheumatic disturbances were associated with the menopause or with irregularity of the menses, with a preparation of whole ovary and stated that the percentage improvement was lower among the controls than in those receiving ovarian substance (*Acta rheumatol.*, **3**, No. 10, 13, 18, 19). F. C. Hall (*New Engl. J. Med.*, 1938, **219**, 1015, and *J. Amer. med. Ass.*, **113**, 1061) carried out a series of observations on 71 female castrates who developed joint symptoms a few weeks after operation. He gave 10,000 to 20,000 rat units of oestrogenic substance a week for six weeks, and in 40 of the 53 cases in which adequate treatment was given 70% were almost completely relieved of joint and muscular pain. It is suggested that arthralgia and arthritis appear to be phases of the same process due to excess of anterior pituitary hormone in the absence of ovarian hormone. Hench (*J. Amer. med. Ass.*, **113**, 1062) found oestrone disappointing and Cecil had similar results. Monroe (*Chronic Arthritis*, Oxford Loose Leaf Medicine, London, 1939) states dogmatically that none of the ductless glands plays a part in originating any type of arthritis.

It is a striking feature from the clinical aspect that rheumatic symptoms develop far more often after the artificially induced menopause than in the natural course of events. In my opinion the probable explanation is that normally, as the supply of ovarian hormone fails, the thyroid takes over its functions in metabolism under the balancing influence of the pituitary. Should the supply of thyroid hormone be inadequate symptoms arise due to this, notably the development of a chronic villous synovitis of the knees and of dense fibrositic deposits in various parts, especially on the inner aspect of the knees and across the back of the neck, together with a slight lowering of the basal metabolism and a raised blood sugar. The factor determining the site of the rheumatic manifestations is mild trauma from overstrain, such as results from flat-foot and other deformities of the feet; frequently also there is a tendency to overweight. In favourable cases the thyroid will gradually overcome the deficiency; but where, as in the artificially induced menopause, the deficiency arises abruptly, symptoms appear more acutely. The use of oestrogenic substances is merely a substitution therapy and should be graduated accordingly so as to give the thyroid time to "catch up." Thyroid itself is generally more satisfactory except for the relief of more urgent developments, and in small doses in conjunction with iodine given over a long period is the most useful line of treatment. Reduction of strain by attention to foot deformities and the like, and by dieting to control any tendency to put on weight, are important adjuncts to the treatment.

Myxoedema and Pregnancy

Q.—*A patient aged 34, mother of two children now aged 5 and 3, developed myxoedema a year ago. This responded to treatment, and she is now perfectly well on a maintenance dose of 2 gr. thyroid (dry ext.) daily. She has now become pregnant. (1) Is there any danger of cretinism in the baby? (2) Is modification of the dose of thyroid during pregnancy or afterwards likely to be necessary?*

A.—There is no danger of cretinism in the baby, and it is unlikely that the dose of thyroid for the mother will require appreciable modification during or after pregnancy. A cretin baby may be produced when there is endemic goitre, but not because a mother is suffering from spontaneous myxoedema. In fact Parkin and Greene (*J. clin. Endocrinol.*, Aug., 1943) have recently recorded cases of juvenile and adult myxoedema on which pregnancy has supervened although they were quite untreated before pregnancy, and in which the baby was completely normal, though no treatment with thyroid was given during pregnancy. Incidentally it is rare for pregnancy to occur in a woman with untreated myxoedema.

Intractable Acne

Q.—*I would be grateful for advice on a persistent case of acne vulgaris and pustularis in a youth of 16. He is dark-haired with a greasy skin. The eruption is present on his back, forehead, chest, and nuchal areas. There is much scarring from old pustules, but I am more concerned at the continual outbreak of pustules. He is on an antiseborrhoeic diet, free of fried food, grease- and fat-free, and no sweets. I insist on daily baths with medisoap No. 67, and I have given him erythematous doses of local ultra-violet light. He is also using a zinc sulph., potass. sulphurata, and acetone lotion, and I am now giving an autogenous Staph. aureus vaccine. A radiologist is giving him superficial x rays once weekly. Is hormone or stock acne bacillus vaccine of any value?*

A.—Acne vulgaris is a chronic and rebellious disorder; it may be assumed that the youth of 16 will continue to be affected for months or years. The record of the treatment already given follows the recognized lines and can be continued. As *x*-ray treatment must be strictly limited, later the U.V.R. can be resumed. Although various hormonal substances have been used for acne, the results have not been encouraging, and this also applies to acne bacillus vaccine. Massage with a Bier's cup is occasionally of value.

Lint: Which Side?

Q.—*Which side of the lint should be placed next to the wound? I have always used the smooth side, but several times lately I have heard it stated that the fluffy side is specially prepared to have a "velvety" softness, and therefore should be placed next to the skin. This is perhaps too small a matter for publication under "Any Questions?"*

A.—When lint—i.e., fluffed linen, both words being derived from linet—flax) was first introduced its use was chiefly as an external application—often with added medication—to the unbroken skin. For this purpose the soft fluffy side is ideal from the comfort point of view, and it also holds plenty of the medicament—e.g., Scott's dressing. When used on a raw surface the smooth side (non-fluffed) is the better one to apply to the wound, but it is probable that other materials—gauze, etc.—are best for this purpose.

INCOME TAX

Commencement of Practice

L. G. commenced a practice in March, 1943, in succession to a deceased practitioner. He has already been assessed for the year 1943-4 and the inspector of taxes informs him that he will be liable to account for the first instalment of the tax in January, 1944.

*** The inspector is acting legally, but L. G. is entitled, of course, to give notice of objection to the assessment, pointing out that the correct liability cannot be calculated until after his accounts to the end of March, 1944, are made up. In the meantime he is entitled to decline to pay on any amount in excess of the probable (or undisputed) liability, and if necessary the Commissioner of Taxes can be asked to decide what amount he should pay. Whether the inspector would be prepared to put all parties concerned to the trouble of such proceedings in order to ensure that tax is paid in, say, February instead of, say, May is doubtful.

LETTERS, NOTES, ETC.

A Rare Presentation

Dr. LEONARD LEY (Great Yarmouth) writes: The following notes of a rare condition may warrant publication. I was called in by the midwife because of delay in delivery of a second twin (the first, a girl, had been born 4 hours with a tear of the perineum). When I arrived pains were strong. Presentation with head well down was vertex anterior. I gave pituitrin. The head was delivered and I freed the chin. I then saw first one hand and then the other present alongside the face. I eased the arms out and this delivered the foetus to the upper end of the sternum. As this level of the trunk appeared toes and a foot (the left) presented and lay under the chin. I have dealt with some 2,000 confinements and have mentioned this case to two colleagues who have probably done as many or more, and none of us has seen or heard of such a happening. This child was a male.

Corrigendum

Prof. GEOFFREY JEFFERSON wishes to point out that the top two illustrations at page 3 of his paper on "The Nature of Concussion" in our issue for Jan. 1 refer to Case 2 and Case 1 respectively. The lower one illustrates Case 3.